S. HRG. 100-813

PROPOSED FISCAL YEAR 1989 BUDGET REQUEST
(Office of Civilian Radioactive Waste Management)

HEARING

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDREDTH CONGRESS

SECOND SESSION

ON THE

DEPARTMENT OF ENERGY'S FISCAL YEAR 1989 BUDGET REQUEST FOR THE OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

MARCH 28, 1988

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PROPOSED FISCAL YEAR 1989 BUDGET REQUEST

Office of Civilian Radioactive Waste Management

MONDAY, MARCH 28, 1988

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The committee met, pursuant to notice, at 10:05 a.m., in room SD-366, Dirksen Senate Office Building, Hon. J. Bennett Johnston, Chairman, presiding.

OPENING STATEMENT OF HON. J. BENNETT JOHNSTON, U.S. SENATOR FROM LOUISIANA

The CHAIRMAN. Good morning.

Today the full committee is conducting a hearing on the current status of the Department of Energy's nuclear waste program and on the administration's budget request for fiscal year 1989. This morning we will hear from witnesses from the Department of Energy and from the Nuclear Regulatory Commission.

The purpose of today's hearings is to get a status report on the Department's implementation of the amendments to the Nuclear Waste Policy Act. This is the committee's first hearing since passage of the Amendments Act in December.

The passage of amendments to the Nuclear Waste Policy Act last year was a major accomplishment. These amendments brought needed redirection to the Department's nuclear waste program.

This morning I am anxious to hear from the Department on its progress with site characterization at the Nevada site. I am also anxious to hear about the status of efforts to close out work at the Washington and Texas sites.

The goal of the Department's program is to find a suitable site for the safe, permanent disposal of nuclear waste. Over the last couple of years we have unfortunately spent far too much of our time and resources on paper studies. We have spent far too little time gathering technical data to assess the suitability of these sites. Finally, with the passage of the Nuclear Waste Amendments, we can move forward and conduct the technical work necessary to accomplish the goal of safe, permanent disposal, and also the work on the monitored retrievable storage.

By making the decision to characterize only a single repository site in Nevada, we have been able to set the nuclear waste program on solid footing and to eliminate many of the uncertainties facing

it. Under the redirected program, the Department can now focus the bulk of its resources on the Nevada site.

I have always been convinced that the problems associated with nuclear waste disposal were political problems, not technical problems. Fortunately, we can now get beyond the political issues and get on with the program to determine the technical suitability of the Nevada site.

The Department has put together what I believe is an aggressive technical program for site characterization. I am anxious for the Department to move quickly with that program so that we can meet the goal of having an operating repository by soon after the turn of the century. I am also anxious for the nuclear waste program to be carried out in a cost effective fashion.

So today I hope to hear good news from the Department about its progress toward meeting these goals. I also hope to hear good news from the Nuclear Regulatory Commission about ongoing efforts to resolve the outstanding technical issues during the site characterization program.

I might add one other point, and that is that I understand the Administration has some plans to send up legislation to do away with the negotiator. I have put in a call to Howard Baker, and we missed one another. I have strongly urged him through the liaison people not to do so, and I hope that that will not be done. That was part of our act. We should not pass an act as difficult as that was to pass, and as many compromises as we had to make, and then two months later have the Administration start trying to dismantle the act. That would just be incredible, and I hope that message got to Howard Baker in time.

I know he is the soul of reasonableness, and if the message got to him in time, I hope that that will be done.

Our first witness this morning will be Ed Kay, Acting Director of DOE's Office of Civilian Radioactive Waste Management.

Mr. Kay, welcome to the committee. Yours is a very, very big and important job. I think the nation is beginning to recognize what a big job that is, and so I welcome you to the committee.

[A prepared statement for the record from Senator McClure follows:]

Opening Statement - Senator James A. McClure

March 28, 1988

Hearing on Nuclear Waste Program

Good morning. It is a pleasure to have before the Committee today witnesses from the Department of Energy and the Nuclear Regulatory Commission to discuss the status of their plans for FY'89 to implement the Nuclear Waste Policy Act as amended by Public Law 100-203.

Beyond the billions of dollars we will be able to save over the next several years by enactment of this landmark Public Law, I think we can look forward to significant benefits to be derived in terms of resource enhancement, largely as a result of the program's focus on a single site for development of a first repository. Better resource allocation will also be realized by the parallel development of a Monitored Retrievable Storage Facility as an integral part of the overall waste disposal program, and by the establishment of benefits packages for the affected states and local governments.

Now that the first repository program has been narrowed to a single site, I cannot over-emphasize the paramount importance attached to the Department's ability to maintain a high level of technical excellence, credibility, and institutional responsiveness in its execution of the program. Even the most ardent optimist would have to concede that the nuclear waste disposal program will always be encumbered with criticisms, strong opposition, and continued litigation at every step of the process. But I still believe that if the Department carries out its responsibilities in a competent and

technically sound manner, it will dissuade the opposition and overcome the considerable obstacles to completion of the Department's tasks.

As a final note, I would like to acknowledge the crucial role that the Nuclear Regulatory Commission will play in the early identification of licensing issues, in the development of regulatory guidance, and in providing technical capability in the furtherance of the nuclear waste disposal program goals.

I look forward to your testimony today.

STATEMENT OF CHARLES E. KAY, ACTING DIRECTOR, OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT, DEPARTMENT OF ENERGY

Mr. KAY. Thank you, Mr. Chairman, Senator Hecht.

With passage of the Omnibus Budget Reconciliation Act of 1987, Congress approved a number of amendments to the NWPA which resulted in a refocusing of the activities of the nuclear waste disposal program. I appreciate the opportunity to testify before you today.

This committee, under your leadership and that of Senator McClure, has been recognized as a key factor in placing the program on a stable course. I appreciate and applaud your accomplishments.

The CHAIRMAN. Would you hold there just a minute?

Senator Hecht I think had a statement, and I am sorry that I neglected to call on you, if I may interrupt your testimony.

Senator Hecht, please forgive me.

STATEMENT OF HON. CHIC HECHT, U.S. SENATOR FROM NEVADA

Senator HECHT. Thank you, Mr. Chairman.

Just a couple remarks.

I wholeheartedly agree with you that the problem of nuclear waste is not a technical problem, it is a political problem, and I applaud your leadership in taking the committee to France and Sweden last year, where France does such an excellent job of reprocessing and recycling, and not one demonstrator, and everyone is very happy with cheap power.

I also applaud your leadership in going ahead with the MRS.

I feel that the act which we just passed was flawed, and I did not know and was not aware about the negotiator until you just mentioned it, and so I appreciate your saying it, and I think, though, that if it is flawed, we can just go back and start all over again and work out a much better and more responsible act.

The CHAIRMAN. Thank you very much, Senator Hecht.

I do not know about starting all over again, but maybe we at least ought to start Mr. Kay's testimony all over again. We will make that concession.

Mr. KAY. Thank you, Mr. Chairman.

As I said, with passage of the Omnibus Budget Reconciliation Act of 1987, Congress approved a number of amendments to the NWPA which resulted in a refocusing of the activities of the nuclear waste disposal program, and I appreciate the opportunity to testify before you today.

This committee, under your leadership and that of Senator McClure, I think were key factors in placing the program on a stable course, and I appreciate and applaud your efforts for that.

My formal statement discusses in detail the fiscal year 1989 budget request and the actions we have taken and are taking to implement the amended directions. I would like to request that my formal statement be submitted for the record, and at this time I will summarize briefly.

The CHAIRMAN. Without objection.

Mr. KAY. The Amendments Act substantially refocuses the waste program. We feel the changes made by Congress are constructive. By focusing on one prospective repository site for site characterization, we can concentrate technical scrutiny on that site. By approving, with conditions, an MRS facility, we believe that the disposal system can be more efficiently operated. By establishing financial benefits, hosting a repository or an MRS may be more attractive.

The CHAIRMAN. Say again? I missed that last sentence.

Mr. KAY. I said by the financial benefits that have been established, hosting a repository or an MRS may be more attractive to a host State.

And by establishing the Nuclear Waste Technical Review Board, the public's confidence in the scientific and technical quality of the program should be enhanced.

The fiscal year 1989 budget request for the Nuclear Waste Fund Program is $448.8 million. DOE believes that the consensus achieved by Congress through the passage of the Amendments Act will provide for substantial near term savings. For example, the estimate contained in last year's fiscal year 1988 budget request, estimated fiscal year 1989 and 1990 together is $2.16 billion. The budget request which is currently before Congress for the Nuclear Waste Fund activities estimates $1.07 billion for those two years.

Therefore, in fiscal year 1989 and 1990, the estimated savings is almost $1.1 billion.

To redefine both current and planned activities and to keep the Congress informed of them, we are drafting an amendment to the Mission Plan. We expect to issue the amendment——

The CHAIRMAN. Let me interrupt there.

Mr. KAY. Yes, sir.

The CHAIRMAN. You have got fiscal year 1989 and 1990 at $1.1 billion and $1.06 billion respectively. And we are going to save $1.1 billion over those two years?

Mr. KAY. The total for fiscal years 1989 and fiscal year 1990 is $1.07 billion, which is $1.1 billion less than the $2.16 billion we had estimated a year before the passage of the Amendments Act for those two years.

The CHAIRMAN. I am missing something here.

It says the fiscal year 1989 budget request for Civilian Radioactive Waste is $449 million.

Mr. KAY. Yes, sir.

The CHAIRMAN. And then down here we say it is $1.1 billion.

What am I missing?

Mr. KAY. $1.1 billion is for fiscal years 1989 and 1990 combined.

The CHAIRMAN. Oh, I see.

Mr. KAY. Yes, sir. Whereas two years ago, or a year ago when we submitted the fiscal year 1988 request, our estimate was $2.16 billion for those two years. So the delta would be $1.1 billion, compared to the budget prior to the passage of the Amendments Act.

The CHAIRMAN. So you have got $449 million this year.

Mr. KAY. Yes, sir.

The CHAIRMAN. As you look forward between now and the year 2000, what kind of budget profile do you have? Will that increase a great deal as time goes on?

Mr. KAY. Yes, sir, it will increase as we get more and more into the site characterization activities, and then if the Yucca Mountain site proves out, as we get into the actual construction of the facility it would increase some. That would be more or less on the same profile that we would have had with three sites for characterization up through 1995 and then went into construction of one site later.

The CHAIRMAN. I think we ought to make as great an effort as we can to keep funding as level as we can. I know it comes out of the Nuclear Waste Fund, but it also counts as an appropriation, and I do not want to get into this kind of situation where we have to ramp up from $449 million to $1.5 billion all of a sudden in one year and not be able to find the money for it and delay the program on that account.

So if we could flatten out that ramp-up, and I know it has got to be a big ramp.

Mr. KAY. Well, the biggest ramp was had we been characterizing three sites. That is where we had looked at the budgets in excess of $1 billion a year, as you are aware.

The CHAIRMAN. What will the profile look like between now and 1995?

Mr. KAY. Excuse me just a minute. About $600 million to $700 million a year for full characterization.

The CHAIRMAN. Fairly level?

Mr. KAY. Yes, sir.

The CHAIRMAN. All right, then, well, please keep that in mind that we want to try to level this off, if you have to even increase it a little in the early years so that we can keep it flat in the next years, it will ensure the continuation and nondelay of the program, I think.

Mr. KAY. Yes, sir.

The CHAIRMAN. Please proceed.

Mr. KAY. To redefine both current and planned activities and to keep Congress informed of them, as I mentioned earlier, we are preparing a draft amendment to the Mission Plan which we hope to issue later this spring.

The CHAIRMAN. By the way, let me interrupt again.

Do you foresee that you can complete this program without raising the amount of the nuclear waste fee?

Mr. KAY. That is our current projection. We are now, based on the Amendments Act, doing a new total system life cycle cost, and we will be issuing a new fee adequacy report in the summer. But our first look at it indicates that we can, that is the 1 mil per kilowatt hour fee will be sufficient.

The CHAIRMAN. How much money do you think we will save in total from these amendments? Have you got any idea?

Mr. KAY. No, sir. We can give you an estimate for the record, though.

The CHAIRMAN. Please do that.

[The information follows:]

This question can be best answered once the Total System Life Cycle Cost Analysis based on the new legislation has been completed. Currently, this analysis is slated for completion by late summer of 1988. However, some preliminary indications of the savings that can be achieved can be made at this time. For example, the

Nuclear Waste Policy Amendments Act of 1987 directs the DOE to characterize one repository site instead of three. This action alone will result in substantial near-term savings. For example, the FY 1988 budget request submitted to Congress last year, which includes characterizing three sites, estimated FY 1989 and FY 1990 as $1.10 and $1.06 billion, respectively. The estimates included in the FY 1989 budget submission for FY 1989 and FY 1990 are $449 million and $624 million, respectively. Therefore, in those 2 years, the current estimated savings are almost $1.1 billion. Additional savings over the total systems life-cycle costs are envisioned and may be quite substantial. DOE is currently conducting its annual total systems life-cycle cost estimates analysis and will report to Congress when the analysis is completed.

Mr. KAY. In addition, a reorganization of the headquarters program on a more functional basis is being implemented and will include increased emphasis on quality assurance, licensing, systems integration and external interactions. We intend to increase our emphasis on developing an integrated waste management system as authorized by Congress. To support these efforts, we are seeking a management and operating contract for systems engineering development and management to oversee the design, development and integration of the waste management system. Bids are due on this RFP by late April.

As we move forward, we believe the changes made by the Congress have made the task of developing the system much more practical by: one, reducing the options for the major elements in the system, such as: reducing the number of repositories currently being sited from two to one; two, reducing the number of sites to be characterized for the first repository from three to one; and three, the inclusion of an MRS facility as an integral part of the system.

Under the Amendments Act, DOE is directed to characterize the Yucca Mountain site in Nevada to determine its suitability for the first repository, and to terminate site specific activities at the Hanford site in Washington and the Deaf Smith County site in Texas.

On January 8, we issued the Site Characterization Plan consultation draft which describes testing and analyses to be conducted at the Yucca Mountain site. We have received NRC's report of a staff's review of the consultation draft. The NRC report raises a number of objections, concerns and questions regarding DOE's characterization program as described in the draft. The issues have been discussed extensively in the past, and we intend to seek resolution during completion of the Site Characterization Plan. We feel confident that we can do so, and I believe Mr. Thompson plans to discuss in a little bit more detail the concerns they have had with the consultation draft of the Site Characterization Plan.

We are currently reviewing the NRC comments in detail, and we are discussing these issues in technical meetings with the NRC. Last week we held four days of meetings with NRC to clarify NRC's positions as presented in their comment document.

In addition, we have held a meeting with them on quality assurance issues, and we have scheduled a meeting in Nevada in mid-April to specifically address the alternative conceptual models issue which they have raised in their concerns.

We will be developing a schedule with NRC to review our QA programs and plans.

We are pleased by the thoroughness of NRC's review. Such a review is what we were seeking from the NRC and the State of

Nevada when we issued the Site Characterization Plan in a consultation draft form.

I might add at this time that we are disappointed with the continuing lack of willingness of the State of Nevada to participate fully in these technical discussions. We have offered to hold technical workshops with the State and the NRC to discuss the SCP consultation draft. The State has stated that they are sufficiently knowledgeable regarding the site characterization so that they need not participate in technical discussions.

Nevertheless, we have kept the State informed and invited them to participate in the technical meetings requested by NRC, and while Nevada has attended the two recent meetings, they have not participated, but only acted as observers. They have neglected two opportunities, I believe, to provide technical inputs. We believe that it is the intent of Congress, as well as the letter of the law, that the State participate, and further, we believe that it is not in the State's best interest, nor in the nation's best interest for them not to fully participate.

In the meantime, we will continue to encourage to the best of our ability the State's involvement in the technical program.

We would also note that for fiscal year 1989, the State of Nevada has requested approximately $23 million in grant funds for oversight. This has been received just in the last couple of weeks. Since this is greatly in excess of our budget request and would be equivalent to over 200 people working full time, we will be reviewing their request very carefully.

Our plans are to finalize the Site Characterization Plan so that it can be issued for public hearings and review and comment early in fiscal year 1989, followed by the initiation of exploratory shaft construction in June of 1989.

Our activities currently under way at Yucca Mountain include the following: Continued development of the final design requirements for the exploratory shaft facility and quality assurance programs and procedures; systems engineering and performance assessment work on conceptual models; ongoing site work such as monitoring wells and seismic stations; systems testing and modeling of waste forms and materials; and engineering studies for pre-advance conceptual design of the repository.

To conduct full site characterization activities, we need to have access to more than 70,000 acres of land. We have acquired a right-of-way for most of that land from the Bureau of Land Management, which has jurisdiction over most of it, and we are negotiating with them to acquire right-of-way to that portion needed, of which Nellis Air Force Base has right-of-way. Nellis is also cooperating with us very well.

In fiscal year 1989, we plan to complete the Site Characterization Plan, to begin full site characterization activities, including the initiation of the construction of the first of two exploratory shafts, to complete pre-advance conceptual design engineering studies for systems engineering, waste package and repository activities, and to work with the State of Nevada and local and county governments, as well as provide financial assistance to them.

I might mention that prior to initiation of the construction of the first exploratory shaft, we would begin constructing some of the

support facilities for the exploratory shaft facility, and we expect to do this work early in the next calendar year.

Phase-out activities are occurring at the basalt and salt sites, to assume an orderly phase-out of financial assistance and termination of contractual activities. The scope of reclamation work has been established and work has begun. At the Hanford site, these activities consist mainly of decommissioning 92 bore holes, the sale of the drill rig that was to have been used for the exploratory shafts at Hanford, reclaiming the drilling disposal and mud pits, removing buildings and utilities, and sealing the near-surface test facility.

At the salt sites in Louisiana, Mississippi and Utah, more than 100 bore holes will be decommissioned, and access roads and instrumentation sites will be reclaimed.

In Texas, the site monitoring network will be decommissioned.

Close-out of site specific activities at the salt sites and the Hanford site will be essentially completed by the end of this month, and reclamation activities at those sites is expected to be completed in fiscal year 1989. While the current estimate for those activities is $120.4 million, funds from the fiscal year 1987 and fiscal year 1988 uncosted obligations will be utilized to complete these activities in fiscal year 1989.

A complete report of close-out activities will be furnished to you in a couple of weeks, in accordance with your request in your floor statement on December 21.

The CHAIRMAN. What are you paying the Indian Tribes for?

Mr. KAY. In the grants that we currently have with the tribes in Washington State?

The CHAIRMAN. Yes, what is the purpose of the grants to the Umatilla, Yakima, and Nez Perce tribes?

Mr. KAY. That is for the monitoring of the termination work that we are doing, the reclamation work we will be doing at the Hanford site. The Amendments Act allowed for the Indian tribes to receive grants for a one year period following the passage of the Amendments Act, which was different from the way the States were doing it.

The CHAIRMAN. What for, though? I mean, why are they being paid?

Mr. KAY. To monitor the activities that we are doing at the site and the reclamation activities.

Senator EVANS. Mr. Chairman, from the beginning, when this was still an active site under consideration, the several Indian tribes who have a very real concern about the water quality and the problems as it relates to the Columbia River, had been included by their nature as separate governments, essentially on a parallel with the State for part of the process. I think this is a close-out of that same independent view of the Indian tribes vis-a-vis the State and their concerns over the environmental impact of whatever goes on there. I think that was the rationale at the beginning, and this just carries that on to its conclusion.

The CHAIRMAN. Well, I was hoping there was not anything going on there now.

Senator EVANS. Well, a lot of the close-out is to ensure that what is left when they are finished is adequate in terms of protection of the environment.

Mr. KAY. As directed by Congress, the program to site a second repository is being terminated, and close-out activities have been initiated. The next major requirement in this area is the submission of a report to the President and the Congress between the years 2007 and 2010 on the need for a second repository.

The Amendments Act authorizes an MRS facility as an integral part of the overall waste management system and places certain conditions on the timing of its siting, construction and operation. Even with the conditions now linked with the construction of an MRS, we continue to believe it offers advantages as a flexible coupling between the over 100 operating reactors in this nation and the eventual repository.

Based on provisions in the Amendments Act, we have established within the waste program an MRS engineering study group which has been assigned the task of framing and evaluating various waste management systems with different MRS configurations.

In fiscal year 1989, we plan to initiate testing and demonstration of storage modules and packaging and handling equipment to conduct design studies, to begin the survey of evaluation of potential MRS sites, and to provide funding for grants.

The initiation of surveys and evaluation of potential MRS sites will not begin until after the submission of the MRS Review Commission's report required by the Amendments Act.

The Commission was named last week, as you know, and we are prepared to support them in any way we can to help them complete their work.

We are currently conducting an evaluation of all ongoing international research programs and activities to determine whether continuation is appropriate. It is important to the U.S. program to continue active participation in cooperative activities such as those conducted under bilateral agreements and through participation in forums provided by such international organizations as the IAEA and the Nuclear Energy Agency.

While evaluation may result in the redirection of funding for programs whose program objectives are not compatible with the congressional direction we received in December, we feel that the knowledge gained through international cooperative activities can contribute greatly to our repository studies and activities at Yucca Mountain.

Development and operation of a safe, efficient transportation system is critical to the overall development of an integrated waste management system. Transportation is or will probably be the single most public issue in the development of the waste disposal program since the waste will pass through many States and communities. Our current activities in this regard include development of from-reactor cask designs, cask testing, and the conduct of workshops and transportation coordinating groups, one of which is meeting in Atlanta this week.

The Amendments Act provides the requirement that all transportation casks be certified by NRC and the capability to provide emergency training for local communities. We believe these provi-

sions are constructive and enhance our ability to develop an efficient transportation system and to convey to the citizens of the various States the fact that transporting the waste does not pose the threat to public health, safety and environment that many would lead them to believe.

While the Amendments Act gave no role to the Department in establishment of the Nuclear Waste Technical Review Board to be named by the President, and the MRS Review Commission mentioned earlier, $10 million is included in the fiscal year 1989 budget request for personnel, administrative costs, studies, analysis and other activities as they may be required to support these new functions.

We are currently preparing to work with these groups and to cooperate in every way possible. We believe the involvement by these groups established by Congress will enhance the scientific and technical review and the verification of the waste program activities, and we plan to be responsive and supportive.

As a major continuing initiative, DOE is developing a licensing support system to be an automated information storage and retrieval system. The licensing support system will assist the Department and the NRC in the licensing of a repository. We are currently participating in a negotiated rulemaking with NRC, the State of Nevada, and other interested parties. The resulting product will determine many of the system's operating capabilities.

Negotiations are currently under way with NRC to establish a Memorandum of Understanding to provide for the Nuclear Waste Fund payment to NRC for licensing related activities as described in the NRC budget request. Based on estimates of the level of activities and funding that may result from these negotiations, DOE is requesting $15 million in fiscal year 1989 as well as in fiscal year 1990 and 1991. We realize that these are lower than the estimates that are submitted by NRC, and we are working to resolve the differences with the NRC.

Mr. Chairman, this concludes my overview. I would be happy to answer any questions by you or any other Members at the appropriate time.

[The prepared statement of Mr. Kay follows:]

STATEMENT BY

CHARLES E. KAY

ACTING DIRECTOR

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES

UNITED STATES SENATE

MARCH 28, 1988

Mr. Chairman and Members of the Committee:

I am pleased to present to you information concerning the FY 1989 budget request for the U. S. Department of Energy's (DOE's) Office of Civilian Radioactive Waste Management (OCRWM) and DOE's plans to implement the amendments to the nuclear waste program enacted by Public Law 100-203.

My statement includes major activities planned for FY 1989 under the Nuclear Waste Fund program, as well as under the Civilian Radioactive Waste Research and Development program and provides a status report on implementation of the Nuclear Waste Policy Act of 1982 (NWPA), as amended. Since the NWPA requires the annual submission of a triennial budget under the Nuclear Waste Fund, in the discussion of the FY 1989 Nuclear Waste Fund program, estimates for FY 1990 and FY 1991 are included.

With passage of Public Law 100-203 (the Budget Reconciliation Act for FY 1988), Congress approved a number of amendments to the NWPA, which resulted in a refocusing of the site characterization activities of the nuclear waste disposal program. We feel that the changes made are constructive ones. By initially focusing on one prospective repository site, we can concentrate technical scrutiny on that site. The action that Congress has taken will provide for substantial near-term savings, including more than a half-billion dollars in 1989 alone.

The FY 1989 budget proposed for the Office of Civilian Radioactive Waste Management is based on the Nuclear Waste Policy Amendments Act of 1987 (Amendments Act), which was part of the Reconciliation Act. As I have noted, the Amendments Act directs

DOE to focus on only one site, rather than three, as the candidate for the Nation's first deep, geologic repository for spent nuclear fuel and high-level radioactive waste.

There are other major changes in the program which were effected by the enactment of the Amendments Act, including authorization to site, construct and operate one monitored retrievable storage (MRS) facility, but with certain conditions; the repeal of the requirement in the NWPA to site a second geologic repository; the requirement to report to the President and to the Congress between 2007 and 2010 on the need for a second repository; the establishment of a Nuclear Waste Technical Review Board and an MRS Review Commission; broadening of impact assistance and other financial provisions; and the establishment of financial benefits and benefits agreements for hosting a repository or an MRS.

These changes substantively alter the focus of the program. To redefine both current and planned activities and to keep the Congress informed of them, the Office of Civilian Radioactive Waste Management is drafting an Amendment to the OCRWM Mission Plan. DOE expects to issue the Amendment in draft later this spring. In addition, based on the refocused activities and our intention to emphasize quality assurance, licensing, systems integration and external interactions, a reorganization of the headquarters program is being implemented.

BUDGET OVERVIEW

The FY 1989 budget request for the Civilian Radioactive Waste Management program to be derived from the Nuclear Waste Fund established under the NWPA is $449 million as compared to

$360 million in FY 1988 (Table 1). The FY 1990 estimate is $624 million and the FY 1991 estimate is $666 million. For the fiscal years 1989, 1990 and 1991, the request and estimates are considerably lower than projected in previous years due to the new mandate to characterize only one repository candidate site instead of three, and to defer activities related to a second repository. For example, the FY 1988 budget request submitted to Congress last year estimated FY 1989 and FY 1990 as $1.10 billion and $1.06 billion, respectively. Therefore, in those two years, the estimated savings is almost $1.1 billion.

The FY 1989 budget request for the Civilian Radioactive Waste Research and Development (R&D) program as part of the DOE Energy Supply R&D programs is $2.5 million (Table 2).

TABLE 1

FY 1989
CONGRESSIONAL BUDGET REQUEST
NUCLEAR WASTE FUND
(Dollars in Thousands)

	FY 1987 Actual	FY 1988 Estimate	FY 1989 Request
First Repository	$296,881	$240,900	$289,661
Second Repository	19,800 a/	3,500	0
Monitored Retrievable Storage	20,000	4,000	15,000
Transportation and Systems Integration	25,500	37,000	43,600
Program Management and Technical Support	45,875	56,800	62,232
Capital Equipment	11,944	17,800	23,339
	79,000 b/	0	0
TOTAL Program	$499,000	$360,000	$433,832
NRC Fees	0	0	15,000
TOTAL Nuclear Waste Fund	$499,000	$360,000	$448,832
Staffing (FTEs)	307	315	300

Footnotes:

a/ Of this amount, $10,200,000 was largely in support of non-site-specific investigations of the suitability of crystalline rock for repository medium. The remaining $9,600,000 supported to a great extent the development of generic experimental techniques and analytical methods to be applied to repository geological media, taking advantage of applicable international experience.

b/ DOE reserve pending completion of the terms contained in the Continuing Resolution, P.L. 99-500 and P.L. 99-591.

TABLE 2

FY 1989
CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
CIVILIAN RADIOACTIVE WASTE RESEARCH AND DEVELOPMENT
(Dollars in Thousands)

	FY 1987 Actual	FY 1988 Estimate	FY 1989 Request
Spent Fuel Storage Development	$6,287	$4,800	$2,300
Program Direction	200	200	198
TOTAL Civilian R&D	$6,487	$5,000	$2,498
Staffing	3	3	3

NUCLEAR WASTE FUND PROGRAM

The goal of the Nuclear Waste Fund program is to site, characterize, construct and operate a waste management system and development of a transportation system, for the disposal of spent nuclear fuel and high-level radioactive waste from commercial and atomic energy defense activities in a manner that is safe and environmentally acceptable. This mandate was established by Congress and is embodied in the NWPA, as amended. While that mandate remains unchanged, the focus of the site characterization program has been altered by the Amendments Act. A brief summary of the provisions contained in the Amendments Act pertaining to the Civilian Radioactive Waste Management Program appears in Attachment A.

As discussed in Attachment A, additional participants or oversight bodies have been established by Congress: an 11-member Nuclear Waste Technical Review Board and a 3-member MRS Review Commission. While the Amendments Act gave no role to DOE in establishment of these groups, funds are included in the FY 1989 Nuclear Waste Fund Congressional Budget Request ($10 million) as well as the FY 1988 budget estimates ($5 million). These funds are for personnel, administrative costs, studies, analyses and other activities as may be required to support these new functions.

We are currently preparing to work with these groups and to cooperate in every way possible. DOE believes the process established by Congress will enhance the scientific and technical review and the verification of the waste program activities and we plan to be responsive and supportive.

FIRST REPOSITORY

Under the Amendments Act, DOE is directed to characterize the Yucca Mountain site in Nevada to determine its suitability for the first repository and to terminate site-specific activities at the Hanford site in Washington and the Deaf Smith County site in Texas.

The FY 1989 request for activities associated with the first repository is $301.2 million as compared to $256 million for FY 1988 (including capital equipment). The estimate for FY 1990 is $405 million and for FY 1991 is $435 million. The increase in FY 1989 is needed to complete the Site Characterization Plan; to begin full site characterization activities, including the initiation of construction of the first of two exploratory shafts; to complete pre-Advanced Conceptual Design engineering studies for systems integration, waste package and repository activities; and to provide financial assistance to the State of Nevada and local governments in Nevada.

It is important to note that the current schedule for major milestones associated with work at the Yucca Mountain site is essentially the same as that presented in the June 1987 OCRWM Mission Plan Amendment, with two exceptions: the start of exploratory shaft construction and the start of in-situ testing. The current schedule is shown in Table 3.

TABLE 3

SCHEDULE FOR THE FIRST REPOSITORY
(In Calendar Years)

Milestone	1987 Mission Plan Amendment	Current Schedule
Start of exploratory shaft construction Tuff	4th quarter 1988	2nd quarter 1989
Start of in-situ testing	2nd quarter 1990	4th quarter 1990
Submittal of site selection report and environmental impact statement to the President	1994	1994
Submittal of the license application to the Nuclear Regulatory Commission	1995	1995
Receipt of a construction authorization from the Nuclear Regulatory Commission	1998	1998
Start of construction	1998	1998
Start of phase 1 operations	2003	2003
Start of phase 2 operations	2006	2006

Before discussing the details of our plans for FY 1989, I would like to provide a current status of major activities with regard to first repository activities.

o Phase-Out and Reclamation

As stated earlier, the Amendments Act requires that site-specific activities at the Hanford site and the Deaf Smith site be phased out within 90 days except for reclamation work. Phase-out is occurring and includes the following:

- o Orderly phase-out of financial assistance is underway for Texas, Washington, the Confederated Tribes of the Umatilla Indian Reservation, the Yakima Indian Nation and the Nez Perce Indian Tribe, as well as Louisiana, Mississippi and Utah where salt sites were previously identified and surface studies were conducted. Attachment B indicates the level of grants for these parties. Attachments C and D provide details, including the termination dates for the grants.
- o Termination of contractual activities associated with site-specific work at the Hanford and Deaf Smith County sites has been initiated. Attachments C and D summarize the termination activities and schedules for the Hanford and Deaf Smith County sites, respectively.
- o The scope of reclamation work has been established and work has begun. At the Hanford site, these activities consist mainly of decommissioning 92 boreholes, demobilizing the drill rig that was to have been used for the exploratory shafts, filling the drilling and disposal pits, removing buildings and utilities and sealing the Near Surface Test

Facility. At the salt sites in Louisiana, Mississippi and Utah, more than 100 boreholes will be decommissioned and access roads and instrument sites will be reclaimed. In Texas, the seismic monitoring network will be decommissioned.

- Other phase-out or reclamation-related activities include, but are not limited to, records/documents retention and management and equipment/property disposition. Also included is the archiving of valuable core samples in Washington and Texas.

- Issuance of Site Characterization Plan for Nevada

The Site Characterization Plan (SCP), which describes testing and analysis to be conducted at the Yucca Mountain site, was issued as a Consultation Draft to the State of Nevada and the NRC on January 8, 1988. The first general session, intended to begin the process of conducting technical workshops with Nevada and NRC, was held January 28-29, 1988, in Reno, Nevada. Also, associated draft environmental and socioeconomic plans were issued prior to January 8. We intended to hold workshops with Nevada and NRC as part of the consultation process. To date, however, the State of Nevada has indicated their lack of willingness to participate in this consultation.

NRC has requested technical meetings on a number of SCP subjects. These meetings are being scheduled and the State of Nevada is invited to participate. As with other DOE/NRC technical meetings, these meetings are open to the public.

Our plans are to finalize the SCP so that it can be issued for public hearings and review and comment early in the next fiscal year followed by the initiation of exploratory shaft construction in June 1989.

o International Programs

DOE is currently conducting an evaluation of all ongoing international research programs to determine whether continuation is appropriate. Following that evaluation, we will take the appropriate steps, in accordance with the provisions of the Amendments Act, to phase out funding for those research programs whose program objectives are not consistent with the direction contained in the Amendments Act.

It is important to the U.S. program to continue active participation in international cooperative activities in the area of radioactive waste management, such as those conducted under bilateral agreements and through participation in forums provided by such international organizations as the International Atomic Energy Agency and the Nuclear Energy Agency of the Organization for Economic Cooperation and Development.

In addition, in the civilian radioactive waste R&D program, DOE and NRC, in accordance with Section 223 of the NWPA, have jointly offered to cooperate and provide technical assistance to non-nuclear weapon states in a variety of areas related to radioactive waste management. This cooperation is continuing.

o Surface-based Testing

Surface-based testing at the Yucca Mountain site has been a continuing activity for several years. Approximately a year ago, DOE sent to the State of Nevada an outline of its ongoing and

planned surfaced-based testing for the Yucca Mountain site. The Site Characterization Plan Consultation Draft expands the description of the testing to include the entire site characterization phase of the program, including underground testing in the Exploratory Shaft Facility.

During FY 1988, DOE's principal activities with regard to the first repository include the issuance of, consultation on and revision of, where appropriate, the Site Characterization Plan Consultation Draft for Yucca Mountain; continuation of surface-based characterization activities; repository and waste package design; financial assistance; phase out of site-specific activities at the Hanford and Deaf Smith County sites; and reclamation activities at Hanford and at salt sites in Texas, Louisiana, Mississippi and Utah.

During FY 1989, geologic, tectonic/seismologic, hydrologic and geochemical investigations will continue at the Yucca Mountain site as full site characterization proceeds. These investigations will complement initiation of exploratory shaft construction. Borehole and core sample drilling and testing will be increased, as well as environmental and socioeconomic characterization. Final design for the exploratory shaft facility and readiness reviews for construction and site preparation activities for construction of the first of two exploratory shafts will be completed.

During site characterization, evaluation of site suitability will consider the uncertainties in the available field data, as well as uncertainties in conceptual and numerical models used to assess expected site performance. This is an important facet of

site characterization because there are some 800 scientists who participate in these studies, and it is critical to the national program that evaluation of the suitability of the site be technically and scientifically sound.

Under the current schedule, exploratory shaft construction is to begin in June 1989. Construction-phase testing will begin during shaft sinking.

Engineering activities during FY 1989 will include continuing the review and updating of the technical data base; continuing the systems engineering analysis and performance assessment to support preparation for the advanced conceptual design engineering work; continuing waste forms and materials and waste package environment testing and modelling; updating rock mechanics data base; and continuing international activities, as appropriate, in support of the first repository program.

In the regulatory and institutional area, we will continue to meet with the NRC and the State of Nevada to discuss and resolve technical issues. Activities will continue to implement the Environmental Monitoring and Mitigation Plan. The Socioeconomic Monitoring and Mitigation Plan and monitoring data reports will be compiled.

Financial assistance to the State and local governments for oversight will continue, and as required by the Amendments Act we will submit the Section 175 Impact Assistance Report to Congress. The Department will offer to begin negotiating a Benefits Agreement (discussed in Attachment A) with the State of Nevada. If an agreement is reached, benefits would then start.

Project management of repository-related activities will include management and support functions, such as the updating of project planning documents, operation of cost and schedule control systems, financial management and budgeting, and operation of a quality assurance program that meets DOE and NRC requirements.

Close-out of site-specific activities at the salt site and the Hanford site will be essentially completed by the end of March 1988 and reclamation activities at those sites are expected to be completed in FY 1989. While the current estimate for these activities is $120.4 million, funds from FY 1987 and 1988 uncosted obligations will be utilized to complete these activities in FY 1989. Therefore, no additional funds are requested for FY 1989.

SECOND REPOSITORY

In accordance with the Amendments Act, the program to site a second repository is being terminated and close-out activities have been initiated. No funding for site-specific second repository activities is requested in FY 1989, FY 1990 nor FY 1991. As discussed in Attachment A, the next major requirement in this area is the submission of a report to the President and the Congress between 2007 and 2010 on the need for a second repository.

MONITORED RETRIEVABLE STORAGE (MRS)

The Amendments Act authorizes an MRS facility as an integral part of the overall waste management system and places certain

conditions on the timing of its siting, construction and operation. DOE's previously submitted proposal to Congress to locate an MRS facility in Tennessee has been annulled and revoked by the Amendments Act.

DOE continues to believe that the inclusion of an MRS facility to perform the surface activities of packaging for permanent emplacement in a deep, subsurface facility elsewhere is an important and integral element in an effective and efficient waste disposal system.

The FY 1989 request for activities associated with the MRS program is $15 million compared to $4 million in FY 1988. The increase is primarily to initiate testing and demonstration of the storage modules and the packaging and handling equipment; to conduct design studies; to begin the survey and evaluation of potential MRS sites; and to provide funding for grants. The estimate for FY 1990 is $44 million and for FY 1991 is $53 million (both of which include funds for definitive design).

This funding level for FY 1989 will provide for completion of the analysis on the need for and role of an MRS facility, design tradeoff studies, and the development of recommended facility functional design requirements and specifications. Design studies will be conducted to optimize the systems process, to specify interfaces with the overall waste system and to support the start of definitive facility design. Following submission of the MRS Review Commission report, as required by the Amendments Act in June 1989, siting activities, including the survey and evaluation of potentially suitable sites, will be initiated.

Detailed planning for regulatory compliance will continue and work with national organizations to finalize plans for future interactions will proceed. Consistent with the Amendments Act, this proposed funding level will permit DOE to provide and administer grants to States, Indian Tribes or affected units of local governments to assess the feasibility of siting an MRS in their jurisdictions, as appropriate.

TRANSPORTATION AND SYSTEMS INTEGRATION

The FY 1989 request for activities related to transportation and systems integration is $44 million compared to $37 million in FY 1988. The increase is primarily to complete preliminary from-reactor cask designs on selected casks; to initiate public review; to initiate final design of selected from-reactor casks; to continue shipment and receipt of fuel for the hot demonstration of prototypical rod consolidation hardware; and to initiate projects related to spent fuel disassembly volume reduction and canister welding. The estimate for FY 1990 is $73.5 million and for FY 1991 is $80.8 million.

Development and operation of a safe, efficient transportation system is critical to the overall development of an integrated waste management system. Tasks required to meet this responsibility will provide for (1) the full institutional development of an integrated transportation system and (2) the technical development and operation of the system. In developing and operating this system, private industry will be utilized to the maximum extent possible, as mandated by the NWPA, and systems integration will be of paramount importance to successfully integrate the many elements (geologic repository and MRS

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facilities, waste package design and transportation) into a cohesive, efficient, safe and timely waste management system.

Specific critical activities that must continue to have a system in place to begin transporting waste from reactors to an MRS facility or to a repository include: transportation systems acquisition, the development and testing of transportation casks, institutional activities, environmental and economic analysis and the development of various prototypical consolidation, packaging and handling hardware.

a. Transportation

In FY 1989, work will continue on preliminary design of the from-reactor casks and some final cask designs will be initiated in FY 1988. Fabrication of scale models and verification testing will be initiated. Resolution will continue for cask-certification technical issues. In order to support the cask development program, DOE will continue to develop: a cask components data base, materials data-base and automated cask handling technology. Development of functions and requirements for facilities needed to operate the transportation system will continue. Cooperative agreements with State and Tribal organizations, meetings and workshops, and institutional planning and issue resolution specific to a Nevada repository will continue at a level comparable to that of FY 1988.

Other important aspects of the transportation program in FY 1989 include: the initiation of tradeoff studies and analyses to allocate functions to operating facilities, the development of equipment needs associated with the operational system, and the

completion of a feasibility study for a cask servicing and maintenance facility.

b. Systems Integration

The systems integration component of the waste program spans the entire program. In FY 1989, we will commence utilization of our reference data base on waste inventories and characteristics, and continue to update it using waste-stream information provided by defense waste generators and newly-generated data on activated metals associated with spent fuel hardware. We will complete a major portion of the reactor interface assessment project and continue to participate in the waste acceptance issue resolution process involving utility representatives and other program elements. In addition, as called for in the Amendments Act (and summarized in Attachment A), DOE is currently conducting a study and evaluation of the use of dry cask storage technology at reactor sites for temporary storage of spent fuel until such time as a permanent repository is constructed and licensed to operate. A report to Congress is due to be submitted by October 1, 1988.

We will initiate applications of our recently-developed systems engineering analysis capabilities, including waste stream analyses, operations/logistics analysis, cost analysis, reliability/availability/maintainability analyses and risk analysis. Comprehensive systems engineering studies will be conducted for a series of anticipated operational scenarios. Special systems engineering analyses will be conducted and we will continue to support technical workshops.

c. Engineering Development

In FY 1989, activities will include projects related to spent fuel and consolidation process development. Activities will include the conduct of "cold cell" checkouts and the award of a contract for support of a "hot cell" demonstration.

PROGRAM MANAGEMENT AND TECHNICAL SUPPORT

For program management and technical support, the FY 1989 request is $73.6 million compared to $59.5 million in FY 1988 (including capital equipment). The increase is primarily to provide for program technical support and integration efforts and interaction with the Nuclear Waste Technical Review Board and the MRS Review Commission. The estimate for FY 1990 is $86.2 million and for FY 1991 is $82.0 million.

The FY 1989 level of funding supports 300 full-time-equivalent personnel (FTEs) to manage the Nuclear Waste Fund resources; to develop the Licensing Support System; to manage and oversee detailed site characterization; to focus on external interactions; and to continue liaison with the State of Nevada and local governments for selected sites. In addition, this level will provide funding support to manage the Management and Operating Contract for Systems Engineering, Development and Management to oversee the design, development and integration of the waste management system. An amended request for proposals has been issued based on the Amendments Act, and bids are due by late April 1988.

As a major continuing initiative, DOE is in the process of developing a Licensing Support System (LSS) that is an automated information storage and retrieval system that will assist the

Department and the NRC in the licensing of a repository for the disposal of spent nuclear fuel and high-level radioactive waste. It will facilitate the discovery process by having the relevant licensing information contained in an electronic data base accessible to interested parties. Access to the LSS will be available to the interested parties prior to the NRC's consideration of the Department's License Application. The LSS has been designated by the Office of Management and Budget as a "Presidential Priority System."

DOE is currently participating in a Negotiated Rulemaking on this subject with the other participants being the NRC, State of Nevada, appropriate Nevada local governments, industry and environmental groups. The rulemaking will be developed by the NRC based on the consensus achieved by the participants in the Negotiated Rulemaking.

Technical support includes continuing independent financial audit activities, annual fee verification and calculation studies, fund management activities, records management and litigation support. In FY 1989, we will continue activities for the outreach program, including information reviews; continue international cooperation and participation in activities applicable and beneficial to OCRWM and review foreign waste policy activities and development of procedures; and continue cooperative activities with national organizations. In addition, we will continue to provide funding in support of the Nuclear Waste Technical Review Board, the MRS Review Commission, an On-Site Representative at Nevada and a Review Panel, if established as a result of a Benefits Agreement.

NUCLEAR REGULATORY COMMISSION FEES

DOE is currently conducting negotiations with the NRC to establish a Memorandum of Understanding to provide from the Nuclear Waste Fund payment to NRC for licensing-related activities as described in the NRC budget request and conducted in accordance with the NWPA. Based on an estimate of the level of activities and funding that may result from these negotiations, DOE is requesting $15 million in FY 1989. The estimate for FY 1990 is $15 million and for FY 1991 is also $15 million.

NUCLEAR WASTE FUND

The Nuclear Waste Fund, established by the NWPA to collect fees from the generators and owners of spent nuclear fuel and high-level radioactive waste, is reviewed each year to assess the adequacy of the 1 mil per kilowatt hour fee established by the law. Based on the redirection of the program, DOE is currently conducting its annual total systems life-cycle costs analysis and assessing the adequacy of the current fee.

Commercial utilities have been paying into the Fund since April 1983. Table 4 provides a status of the Fund.

TABLE 4

NUCLEAR WASTE FUND STATUS

Cumulative through January 31, 1988

(Dollars in Millions)

Receipts	
Fees	
One-time	$1,442.0
On-going (1 mil)	1,773.2
Total Fees	3,215.2
Interest	474.3
Total Receipts	3,689.5
Disbursements	-1,721.9
Balance	$1,967.6

CIVILIAN RADIOACTIVE WASTE R&D

The goal of the Civilian Radioactive Waste R&D program is to encourage and expedite the development and demonstration of technologies for the addition of new, temporary on-site storage capacity for spent nuclear fuel to permit the orderly continuation of electricity generation operations by the utilities. The FY 1989 request is $2.5 million compared to $5 million in FY 1988. This decrease is due to the completion of participation in various cooperative agreements associated with spent fuel storage development.

The primary activities associated with this program are cooperative demonstrations of technology for the dry storage and consolidation of spent nuclear fuel, and the acquisition of data to permit generic rulemaking by the NRC.

Dry storage systems represent an alternative method for providing additional temporary spent fuel storage at nuclear power plants. Potential methods of dry storage include casks, drywell, silos and vaults. To ensure continued progress in this area, funding is required for FY 1989 to complete and issue final reports on activities undertaken in cooperation with the private sector. These demonstration reports are intended to provide data and information for the eventual licensing of the dry storage technology by the commercial nuclear power industry. In addition, dual-purpose (transport/storage) activities will continue in FY 1989 with the shipment of fuel in licensed dual-purpose casks.

In FY 1989, cooperative demonstrations will be completed with Virginia Power involving dry storage and rod consolidation, with Carolina Power and Light involving concrete horizontal cask dry storage and with Northeast Utilities Services Company involving rod consolidation. In addition to issuing several reports on special studies, an annual update will be issued on the "Spent Fuel Storage Requirements Report." DOE will continue to cooperate through information exchanges with non-nuclear weapon states and to provide annual updates on the Federal Interim Storage Deployment Plan and the Federal Interim Storage Fee Notice.

To manage the Civilian Radioactive Waste R&D program, three FTEs are required.

SUMMARY

The legislation passed in December 1987 provided a more focused direction to the national program established by the Nuclear Waste Policy Act of 1982. The Amendments Act maintains the national commitment to establishing a safe and environmentally acceptable nuclear waste management system for spent nuclear fuel and high-level radioactive waste and provides a focus for repository activities, authorization for a monitored retrievable storage facility as part of the integrated waste disposal system, financial benefits to a host state(s), expanded flexibility for impact assistance, and additional scientific oversight.

These are important changes and will enhance the Nation's ability to proceed with the important task at hand. It is recognized, however, that public opposition will continue, uncertainties will arise, and institutional and technical issues will be identified and addressed. The FY 1989 budget request is designed to carry out the mandate in a safe, efficient and cost-effective way, and technical excellence will not be sacrificed.

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Attachment A

U. S. DEPARTMENT OF ENERGY
SUMMARY OF THE
BUDGET RECONCILIATION ACT FOR FY 1988
(PUBLIC LAW 100-203)
AMENDMENTS TO THE
NUCLEAR WASTE POLICY ACT OF 1982
REFERRED TO AS THE
NUCLEAR WASTE POLICY AMENDMENTS ACT OF 1987

The following is a brief summary of the provisions of the Budget Reconciliation Act for FY 1988 as they pertain to the programs managed by the Department of Energy's Office of Civilian Radioactive Waste Management.

First Repository

DOE is directed to characterize the Yucca Mountain, Nevada, site as the candidate for the first repository. Site-specific activities for the Hanford, Washington, site and the Deaf Smith County, Texas, site -- recommended by the Secretary of Energy and approved by the President in May 1986 for site characterization -- are to terminate within 90 days of enactment of the legislation. DOE is authorized to site and construct, subject to existing licensing requirements, a deep, geologic nuclear waste repository only at the Yucca Mountain site. In the event that the Yucca Mountain site proves unsuitable for development and use as a repository, DOE is required to terminate site-specific activities and report to Congress.

Monitored Retrievable Storage

DOE's proposal to locate a monitored retrievable storage (MRS) facility is annulled and revoked, but DOE is authorized to site, construct and operate one MRS facility as follows:

- DOE is authorized to conduct a survey of potentially suitable sites for an MRS facility. In so doing, the Secretary of Energy may conduct site-specific activities at the sites for the purposes of gathering the information necessary to support a license application. The survey may begin after the MRS Review Commission (discussed later) established by Congress reports to Congress.

- DOE may select a site from among those surveyed after the Secretary recommends to the President a site for development as a repository.

- The selection of a site for an MRS facility shall not require an environmental impact statement, but shall be accompanied by an environmental assessment.

o At least six months prior to selecting a site for an MRS facility, DOE shall notify the affected State or Indian Tribe. Prior to selection of an MRS site, DOE shall hold at least one public hearing in the vicinity of such site for the purpose of receiving recommendations of interested parties.

o No MRS may be located in Nevada.

o When DOE selects an MRS site, the host state may disapprove the selection. The State's disapproval may be overridden by Congress under the expedited procedures contained in the NWPA.

o Once a selection is made, the host state may enter into a benefits agreement (discussed later) pursuant to the Amendments Act if such State surrenders its right to issue a notice of disapproval.

o Construction and operation of an MRS facility is subject to licensing by the Nuclear Regulatory Commission (NRC). The conditions imposed on such license are as follows:

- Construction may not begin until a license for construction of a repository is issued by the NRC;

- The quantity of nuclear waste stored in the MRS may not exceed 10,000 metric tons until the repository begins accepting nuclear waste;

- The quantity of nuclear waste may not exceed 15,000 metric tons; and

- Construction of an MRS facility or acceptance of nuclear waste shall be prohibited during the time a repository license is revoked by the NRC or construction of a repository ceases.

o A three-member commission is established and is to be appointed by the Speaker of the House and the President Pro Tempore within 30 days of enactment of the legislation and shall report to Congress by June 1, 1989, on the need for an MRS facility.

Second Repository

The requirements of the NWPA for the siting of a second deep, geologic repository are repealed. DOE is directed to report to the President and Congress between 2007 and 2010 on the need for a second repository. Site specific activities with respect to a second site are prohibited unless specifically authorized and appropriated. Within six months of enactment, the Secretary of Energy is to phase out research programs designed to evaluate the suitability of crystalline rock as a potential repository host medium.

Siting Benefits

Impact assistance and grants-equal-to-taxes provisions of the NWPA are broadened:

- o To extend technical assistance to affected local governments;
- o To extend mitigation assistance to cover impacts of site characterization activities; and,
- o To extend financial assistance and grants-equal-to-taxes to affected local governments (including special purpose taxing districts).

DOE is authorized to make payments to a State or Indian Tribe who is party to a Benefits Agreement as follows:

BENEFITS SCHEDULE
(Dollars in Millions)

Event	MRS	Repository
Annual payments prior to first spent fuel receipt:	$5	$10
Upon first spent fuel receipt:	10	20
Annual payments after first spent fuel receipt until closure of facility:	10	20

A State or Indian Tribe must waive its right to disapprove siting of a repository or MRS facility and its right to impact mitigation assistance, but not its right to technical assistance, in order to receive the foregoing payments.

Nuclear Waste Technical Review Board

An 11-member Nuclear Waste Technical Review Board is established to review technical aspects of DOE's nuclear waste program. The National Academy of Sciences is to nominate 22 persons to the President within 90 days of enactment and the President shall appoint 11 members for four-year terms. The Review Board is to evaluate the technical and scientific validity of DOE activities carried out after enactment of this legislation and is to report to the Secretary of Energy and to the Congress twice yearly. The Review Board will be abolished one year after receipt of spent fuel at a repository.

Transportation

DOE is prohibited from shipping spent fuel or high-level waste except in packages certified by the NRC. DOE also is required to abide by NRC regulations on advance notification of State and local governments of nuclear waste shipments. In addition, DOE is directed to provide technical assistance and funding for training public safety officials of local governments and Indian Tribes pertaining to nuclear waste transportation.

Dry Cask Storage

The Secretary shall conduct a study and evaluation of the use of dry cask storage technology at the sites of civilian nuclear power reactors for the temporary storage of spent nuclear fuel until such time as a permanent geologic repository has been constructed and licensed by the NRC and is capable of receiving spent nuclear fuel and report to Congress by October 1, 1988.

Authorization of Appropriations

There is authorized to be appropriated from the Waste Fund for activities under the Nuclear Waste Policy Act of 1982, as amended,

(1) In FY 1988, no more than $567 million;
(2) In FY 1989, no more than $545 million; and,
(3) In FY 1990, no more than $484 million.

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Attachment B

PHASE-OUT/RECLAMATION

GRANT LEVELS CURRENTLY APPROVED

Washington Department of Ecology	$584,953
Washington Legislature	$92,000
Nez Perce	$440,000
Umatilla	$363,000
Yakima	$501,340
Louisiana	$43,000
Mississippi	$55,000
Texas	$1,067,000
Utah	$41,000

Attachment C

BASALT WASTE ISOLATION PROJECT (BWIP)
RICHLAND, WASHINGTON
PHASE-OUT AND RECLAMATION INFORMATION

Implementation: Guidance on phase-out and reclamation issued to BWIP in mid-January. BWIP Phase-out and Reclamation Plan in finalization process.

Phase-out: Activities completed on or before March 21, 1988

- Orderly phase-out of site-specific activities, including engineering and design, field testing and drilling, and laboratory testing.
- Termination of contracts when cost effective and except as needed for reclamation.

Phase-out: Activities that may extend beyond March 21, 1988

- Disposition of property and capital equipment.
- Disposition of records, documents, and core samples.
- Personnel relocation assistance.
- Administration of terminated contracts and subcontracts.

Reclamation: Activities for which completion may extend into 1989

- Determination of regulatory requirements
- Plugging of 92 boreholes, ranging to 4000 feet depth
- Closure of the Near Surface Test Facility (NSTF)
- Recovery of a hazardous waste pond.
- Exploratory shaft demobilization and site backfill.
- Laboratory hot-cell cleanup.

Grants and Payment-Equal-to-Taxes

- Closure on PETT with State of Washington and Benton County by mid-1988.
- Grant to State terminated December 22,1987; will be phased out by March 22, 1988.
- Yakima, Umatilla, and Nez Perce grants to continue to December 22, 1988.

Costs -- to completion ($ in millions)

o Sunk, first quarter FY 1988	$27.0
o Phase-out, termination, and reclamation costs to completion	78.0
Total	$115.0

Manpower (Contractors)

End of First quarter, FY 1988	810
End of second quarter, FY 1988	350
End of third quarter, FY 1988	160
End of fourth quarter, FY 1988	70
FY 1989	45

Attachment D

SALT REPOSITORY PROJECT (SRPO)
HEREFORD, TEXAS
PHASE-OUT AND RECLAMATION INFORMATION

Implementation: Guidance on phase-out and reclamation issued to SRPO in mid-January. SRPO Phase-out and Reclamation Plan in finalization process.

Phase-out: Activities completed on or before March 21, 1988

- Orderly phase-out of site-specific activities, including engineering and design, field testing and drilling, and laboratory testing.
- Termination of contracts when cost effective and except as needed for reclamation.

Phase-out: Activities that may extend beyond March 21, 1988

- Disposition of property and capital equipment
- Disposition of records, documents, and core samples.
- Personnel relocation assistance.
- Compile and/or complete SCP and associated references by May 1988.
- Compile and document computer codes by May 1988.
- Close information offices in Louisiana, Mississippi, Utah, and Vega, Texas by March 31, 1988 and in Hereford, Texas by August 31, 1988.
- Administration of terminated contracts and subcontracts.

Reclamation: Activities for which completion may extend into 1989

- Determination of regulatory requirements
- Plugging of 8 boreholes in Utah, ranging to 6384 feet depth.
- Plugging of 94 boreholes in Mississippi, ranging to 5043 feet depth.
- Plugging of 23 boreholes in Louisiana, ranging to 6041 feet depth.
- Verification of closure and/or plugging of 109 small-diameter shallow borings in Louisiana.
- Restoration of 5 tiltmeter sites in Louisiana.
- Restoration of 18 micro seismic network sites in Texas.
- Restoration of 5 weather stations in Texas.
- Restoration of 21 erosion monitoring sites in Texas.
- Laboratory hot-cell cleanup.

Grants

- Louisiana, Mississippi, and Utah grant activities are scheduled to be phased out by March 1988.
- Texas grant activities are scheduled to be phased out by August 1988.

Costs -- to completion ($ in millions)

- Sunk, first quarter FY 1988 ..... $21.1
- Phase-out, termination, and reclamation costs to completion ..... 52.9 *

Total $74.0

* Does not include funds for PNL clean-up of hot-cell test area. Estimate to be determined.

Manpower (Contractors)

End of First quarter, FY 1988 650
End of second quarter, FY 1988 471
End of third quarter, FY 1988 163
End of fourth quarter, FY 1988 109

FY 1989 24

The CHAIRMAN. Thank you, Mr. Kay.
Mr. Thompson.

STATEMENT OF HUGH L. THOMPSON, JR., DIRECTOR, OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS, NUCLEAR REGULATORY COMMISSION

Mr. THOMPSON. Thank you, Mr. Chairman, Members of the committee. I appreciate this opportunity to update the committee on the activities of the NRC that have occurred over the past year related to the Civilian High-Level Waste Disposal Program, with emphasis on the actions that we have taken in implementing the changes required by the Nuclear Waste Policy Amendments Act of 1987. This legislative initiative has resulted in a modest reduction in NRC's resource requirements and has allowed NRC to better focus our resources and management attention on the Yucca Mountain site.

Also during this period, the Commission's interactions with the Department of Energy have increased, as we have just heard, in response to their submittal of the Consultation Draft Site Characterization Plan for the Yucca Mountain Site. Finally, we continue to review our regulatory codes and criteria to determine if changes are needed in order to support the review of a repository construction application within the three-year statutory time frame specified by the Nuclear Waste Policy Act.

Mr. Chairman, with your permission, I would like to summarize the rest of my testimony and submit the full text for the record.

The CHAIRMAN. Yes, without objection.

Mr. THOMPSON. The first area I would like to highlight is NRC's role in implementing the Nuclear Waste Policy Amendments Act of 1987. As you know, that legislation did not change NRC's important licensing responsibilities either for the high-level waste repository or for the monitored retrievable storage facility. However, we have made some regulatory program changes in response in three areas.

The first area is with respect to the repository. NRC's programs and resources have been adjusted to reflect the selection of the Yucca Mountain site for site characterization, and all activities associated with the Washington and Texas site have been phased out. These activities included cancelling the draft site characterization plan reviews for both sites, eliminating the NRC on-site representative positions for those sites, as well as the NRC project managers for those sites, and terminating all technical assistance and research efforts either under way or planned directed at the Texas or Washington sites.

In addition, NRC has reduced the participation in the High-Level Waste Licensing Support System Advisory Committee to those groups that have a direct interest in the Nevada site.

The NRC program will continue site-specific review of the DOE submittal for the Yucca Mountain, with the formal site characterization plan review planned for fiscal year 1989.

The second major area is monitored retrievable storage. The Amendments Act established several new procedures and licensing conditions for a monitored retrievable storage facility, including re-

strictions on the MRS site selection, construction authorization and operations.

These procedures and licensing conditions are currently being incorporated into the Commission's rules and regulations for the independent storage of spent fuel and high-level waste, which is 10 CFR Part 72.

The third major area is the transportation of spent fuel. The Amendments Act places several new requirements on the Department of Energy, including requirements for transportation of spent fuel in NRC-certified casks and notification of the state and local governments. The requirement for use of NRC-certified transportation casks will require NRC review and approval of those casks. However, DOE and NRC had previously agreed on obtaining NRC certification of those transportation packages, and thus I see no additional resource requirements on NRC's part.

The overall effect of the legislative changes and the other changes to our program has been to reduce our resource requirements of NRC's high-level waste program by about $6 million in this fiscal year and about $1½ million in each of the out years.

In fact, this month I complete my first year in the position of the Director of the Office of Nuclear Material Safety and Safeguards, and I think it has been a very challenging and exciting year for me, and I think that the staff has done several activities that I am very delighted to report to you on today.

The first one dealt with our review of the draft site consultation plans that Mr. Kay talked about earlier. We have completed both an acceptance and a technical review. The purpose of the acceptance review was to determine if the draft site characterization plan was reasonably consistent with the guidance and agreements on content and if the contest was substantive enough for both meaningful and prompt review. The staff completed the acceptance review in two weeks. We identified two major omissions which would need to be included in the final site characterization plan to be submitted next year.

In addition, we completed the technical review of the consultative draft on March 7, and we have identified what we thought were three areas that needed particular attention.

The first one was DOE's quality assurance program. The second one was related to the alternative conceptual models of the Yucca Mountain site, and the third dealt with exploratory shaft issues.

As Mr. Kay said, our comments were the subject of a workshop last week in the White Flint area up in Rockville, and we are planning to discuss in more detail the alternative conceptual models at a workshop to be held next month in Nevada.

The staff has also been observing DOE's QA audits. The DOE QA program is one of the most important ones that we think needs to be reviewed in detail and put in place prior to expending major efforts and activities to collect the data for the licensing process. We have observed three DOE QA,the audits of their programs to date, and we are planning, in fact, to observe all of DOE QA audits that are scheduled for this year. This review will help us to determine whether the QA program and its implementation are acceptable for licensing before any significant new site characterization work begins.

It is especially important to have an approved QA program in place before the significant activities related to sinking the exploratory shaft, which is currently scheduled for June of next year. NRC and DOE are in agreement and are working on a schedule to ensure that an approved QA program is in place by then.

Finally, I would like to briefly highlight some developments in the revisions to our regulatory program this past year that I think are important. The first one relates to the quality assurance program. We have identified our activities associated with the technical review program for the QA program, and focused as well on the Q list, which covers those items that are going to be significant from a safety standpoint and need to be identified as QA priorities.

Secondly, we have been developing models and codes, particularly relating to the performance of the site, which would allow us to have confidence that in the licensing proceeding we will have the capability, the methodology to approve review the DOE site with respect to its ability to meet the EPA standard and our own regulations.

In this particular effort we have put in place this year the federally funded research and development center, which is called the Center for Nuclear Waste Regulatory Analysis (CNWRA), and will be run by the Southwest Research Institute. That was put in place in October and will provide the NRC with technical expertise and capabilities independent of the DOE laboratory system. The lack of independence from DOE labs which has been of some concern to NRC and those who have reviewed NRC's activities in the past.

In summary, the Amendments Act has not caused a significant change in NRC's high-level waste program licensing responsibilities. Characterization of only a single site, however, has allowed a moderate reduction of our resources and will allow more focused management oversight of the Yucca Mountain activities.

The NRC interactions with DOE have gone well, particularly during the draft consultation site reviews that we just talked about. There have been open and useful exchanges of information during these meetings. A major thrust of those interactions has been the development by DOE of an NRC-approved quality assurance program plan prior to initiation of new significant site characterization activities at the Yucca Mountain site.

I am optimistic that this as well as other prelicensing issues can continue to be discussed and resolved in a timely manner.

I trust that my testimony this morning has been helpful to the committee, and I will be pleased to answer any questions.

[The prepared statement of Mr. Thompson follows:]

PREPARED TESTIMONY

SUBMITTED BY

UNITED STATES NUCLEAR REGULATORY COMMISSION

TO THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES

UNITED STATES SENATE

CONCERNING

CIVILIAN HIGH-LEVEL RADIOACTIVE WASTE DISPOSAL

PRESENTED BY

HUGH L. THOMPSON, JR., DIRECTOR

OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

Mr. Chairman, members of the Committee, thank you for this opportunity to update the Committee on the activities of the Nuclear Regulatory Commission (NRC) that have occurred over the past year related to the Civilian High-Level Waste Disposal Program with emphasis on the role of the Commission in implementing the changes required by the Nuclear Waste Policy Amendments Act of 1987. This legislative initiative has resulted in a modest reduction in resource requirements and allowed us to better focus our resources on the Yucca Mountain site. Also, during this period the Commission's interactions with the Department of Energy (DOE) have increased in response to their submittal of the Consultation Draft Site Characterization Plan (CDSCP). Finally, we continue to develop and implement the regulations, guidance, and technical capability to support the review of a repository construction application within the three-year time period specified in the Nuclear Waste Policy Act.

Now, Mr. Chairman, with your permission, I would like to discuss each of these topics separately. I will begin with the effects of the legislative initiatives.

1987 HLW LEGISLATION

The Nuclear Waste Policy Amendments Act of 1987 (P.L. 100-203) did not change the NRC's licensing responsibilities either for the repository or for the monitored retrievable storage (MRS) facility. However, NRC has made changes to our regulatory program in response to the legislative changes in the

national HLW program's direction and schedule. The principal changes in our program involve three areas: the repository, the MRS, and transportation.

Repository

The NRC program and resources have been adjusted to reflect the selection of Yucca Mountain as the only site DOE is to characterize. NRC has phased out all activities associated with the Washington and Texas sites. For example, NRC has reviewed only the single Consultation Draft Site Characterization Plan (CDSCP) for the Yucca Mountain site in FY 1988, instead of reviewing three CDSCPs simultaneously as would have been required prior to enactment of the legislation. The NRC has reduced participation in the High-Level Waste Licensing Support System Advisory Committee to those groups with a direct interest in the Nevada site.

The specific changes caused by the cited legislation on the NRC program were:

-- Termination of all site-specific activities for the Texas and Washington sites including:
   -- cancelling CDSCP reviews for these sites;
   -- eliminating on-site representative positions at both sites;
   -- eliminating Project Managers for these sites;
   -- terminating all technical assistance and research, either underway or planned, directed at these sites.

-- Adjustment of NRC's regulatory development and license review schedule, as appropriate, based on revised DOE schedules and plans.

The NRC program will continue site-specific reviews of DOE submittals for the Yucca Mountain site in Nevada. The CDSCP is being reviewed in FY 1988, and the formal SCP will be reviewed in FY 1989. NRC will also continue the program to prepare to complete construction application review in three years.

Monitored Retrievable Storage

The NWPAA established several new procedures and licensing conditions for a monitored retrievable storage (MRS) facility, including restrictions on MRS site selection, construction authorization, and operations.

These procedures and licensing conditions are currently being incorporated into the Commission's regulations for the independent storage of spent fuel and HLW. The Amendments Act also contained provisions regarding the environmental impact statement prepared for an MRS, and these are being incorporated into the Commission's regulations as well.

Transportation

With respect to transportation provisions in the Amendments Act, the Act places several new requirements on the Department of Energy, including requirements for transportation in NRC-certified casks and notification of state and local governments.

The requirement for use of NRC-certified transportation casks will require NRC review and approval of those casks. I should note here that DOE had

previously expressed in a Procedural Agreement (48 FR 51875) between our two agencies their intent to use NRC-certified packaging for NWPA shipments. Thus, this new requirement essentially formalizes DOE's own intentions in this matter, and requires no new resources for the NRC.

Similarly, DOE had previously notified us of their intent to adopt NRC regulatory provisions regarding advance notification of state governments, who would then notify local governments according to individual state procedure. The new requirement represents a formalization of DOE practice, and imposed no new resource requirements on the NRC.

Finally, Section 180(c) calls for DOE to provide technical assistance and funds to states for training of public safety officials through whose jurisdiction the Department plans to ship spent fuel or high-level waste. This is a DOE matter with which NRC has no involvement.

The overall effect of these legislative changes and other changes to our program has been to reduce the resource requirements of the program from the FY 1987 estimate of $25.7 million to the FY 1988 level of $21.1 million. This reduction is due in large part to the repository siting changes, rather than the MRS or transportation changes, since most of the NRC activities related to MRS and transportation were scheduled to occur in FY 1990 or beyond.

Now I would like to turn your attention to the specific NRC activities completed to date related to our review of the DOE's site characterization effort.

SITE CHARACTERIZATION EFFORTS

On January 8, 1988, DOE transmitted a Consultation Draft Site Characterization Plan (CDSCP) for the Yucca Mountain site to the State of Nevada and NRC. The consultation draft document is a preliminary version of the SCP which is a statutory document intended to lay out the overall logic behind and structure for the DOE plans for characterizing the Yucca Mountain site. It will contain an extensive discussion of the programs and investigations to be conducted during site characterization, as well as a description of the site and conceptual designs of the repository and waste package based on current information. The purpose of the CDSCP is to provide an advance opportunity for DOE to explain the SCP and allow early consultation on issues identified. NRC has a two-fold purpose for reviewing the CDSCP: first, to continue the effort of the past five years since passage of the NWPA toward early identification and resolution of potential licensing issues during the pre-licensing part of DOE's HLW program; and second, to prepare for fulfilling its mandated responsibilities under the NWPA to review the final SCP.

Prior to initiating its review of the CDSCP, the staff completed an "acceptance review" to determine if the CDSCP content was reasonably consistent with the NRC guidance and agreements on SCP content. The staff's acceptance review found that while the overall document was acceptable for

review, considering that it is a consultation draft, there were two major omissions which would need to be addressed in the Final SCP. First, there was inadequate information to support the conclusion that the exploratory shaft construction and testing will not adversely affect repository performance. Second, some references, including the conceptual design report, were not received along with the CDSCP. The staff did, however, conclude that adequate material was available in most technical areas to allow a substantive review. On January 28 and 29, 1988, the staff participated along with State of Nevada representatives, in a plenary meeting held by DOE on the CDSCP. DOE provided NRC and the state with an introduction to specific aspects of the CDSCP and provided general information on Monitoring and Mitigating Plans and the Environmental Regulatory Compliance Plan associated with site characterization activities. The staff's review of the CDSCP to date resulted in transmittal of the staff's draft comments to DOE on March 7, 1988. The staff will finalize its comments on the CDSCP and will transmit them to DOE following a workshop with DOE to be held in mid-April.

Although all of the draft comments identify concerns that DOE needs to address before starting site characterization, there are three areas of primary concern to NRC:

(1) DOE's QA program;

(2) The need to consider possible alternative conceptual models of the long-term performance of the hydrologic and geologic systems at the Yucca Mountain site in the development of testing programs; and

(3) Exploratory shaft construction and waste isolation issues.

NRC draft comments on the CDSCP were the subject of workshops with DOE and Nevada in March, and we will continue efforts to resolve these comments in a forthcoming workshop with DOE and Nevada in April. A major topic of discussion will be alternative conceptual models of the long-term performance of the hydrologic and geologic systems at the Yucca Mountain site, including the model of the groundwater system developed by Mr. Szymanski of the DOE Nevada staff.

With respect to NRC's review of DOE's QA program, since January 1988 the staff has monitored DOE's audits of its contractors for the exploratory shaft facility and of the contractor providing the corrosion rate data for the waste packages. The staff will also observe a third DOE audit of its contractor for surface facilities. In addition, the staff plans to observe all of the DOE QA audits scheduled during FY88.

Complementing the monitoring of DOE's own audits is the NRC staff review of the DOE QA plans and their implementation. This review will help determine whether the QA program and its implementation are acceptable for licensing before any significant new site characterization work begins. The staff has had several meetings with DOE to review the concerns it has identified to date with the QA program. In the area of ongoing data collection, the staff met with DOE and the U.S. Geological Survey to gain an understanding of the seismic monitoring network for the Yucca Mountain Site.

Finally, I would like to describe activities related to development and updating of our regulatory program to support a three-year construction application review beginning in 1995.

NRC REGULATORY DEVELOPMENT

NRC's major challenge in the HLW program is to have in place the regulations, guidance, and technical capability to support a review of an HLW repository construction application within the three-year time period specified in the Nuclear Waste Policy Act. The NRC will continue and, to the extent possible, due to the focusing of DOE's effort on one potential site, accelerate its efforts in several areas.

Quality Assurance

As I have mentioned with respect to NRC's activities regarding DOE's site characterization effort, one major issue being addressed concerns quality assurance. Most data collected during site characterization are expected to be used in the licensing process, and therefore must be of demonstrably high quality. Before data collection from any new source begins at the Yucca Mountain site, DOE has committed to having qualified quality assurance (QA) programs in place for site characterization activities that may be important to public health and safety and to waste isolation. The NRC efforts are aimed at developing staff positions on methods for meeting QA requirements in NRC regulation, reviewing DOE QA plans and procedures, and most importantly, assessing DOE's implementation of its QA program. In addition, at the request

of Nevada, the staff will be reviewing Nevada's QA program for site studies they plan to perform independently.

Models and Codes

Predictions of repository performance over long periods of time must rely, at least in part, on mathematical models and computer codes. In order to have an independent review capability, the NRC has been developing its own models and codes for certain key processes, including groundwater flow and transport of radioactive materials. This effort will now be concentrated on the phenomena of interest at the Yucca Mountain site. Of particular importance is development of an improved understanding of groundwater flow in unsaturated media. The NRC is also investigating methods for verifying the accuracy of the models and codes under development.

Technical Support

The NRC anticipates a continuing need for contracted technical support to prepare for, and later to conduct, a repository licensing review. Previously, the NRC has had to rely on DOE laboratories or on private contractors who sometimes had a perceived conflict of interest due to related work for DOE or other parties. The NRC has now entered into a long-term contract with a Federally Funded Research and Development Center who will do HLW work only for the NRC. The Center is currently working with the staff in accelerating our capability to develop a methodology and computer codes for evaluating waste

package longevity. Because the Center is dedicated to the NRC, this contract will assist the NRC in its technical development efforts while avoiding potential conflicts of interest.

Staff Technical Positions

Based on our ongoing review of DOE's program and a number of interactions with DOE and Nevada, the staff has identified a number of areas where additional guidance is needed to clarify what is required to show compliance with the NRC regulations. The NRC has issued several Staff Technical Positions, such as the recently released Technical Position on anticipated processes and events, and has several others in development. Examples include development of a Format and Content Guide specifying the information to be submitted in an application for construction authorization, guidance on implementation of a quality assurance program described above, and clarification or further explanation of terms used in the regulations. Finally, the NRC plans to work to develop an implementing rule which can be issued when EPA reissues its HLW standards.

SUMMARY

In summary, the Amendments Act has not caused significant changes in the NRC's HLW program licensing responsibilities. Characterization of only a single site, however, has allowed a moderate reduction of the resources allocated for reviews of site characterization plans and activities, and will allow more focused management oversight of the Yucca Mountain activities. The NRC's

interactions with DOE during the Consultation Draft Site Characterization Planning is going well, with open and useful exchanges of information. A major thrust of the NRC's interactions with DOE have been and will continue to be development by DOE of an NRC-approved quality assurance plan prior to initiation of major site characterization activities at Yucca Mountain. I am optimistic that this, as well as other pre-licensing issues can continue to be discussed and resolved in a timely manner.

I hope my testimony here today has been helpful. I would be pleased to take any questions you may have.

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The CHAIRMAN. Thank you very much, Mr. Thompson.

Mr. Kay, I think we need and I think you need, and maybe you already have it, but I think we need to prepare a critical path/schedule of activities of your department between here and the opening of the repository and the MRS on the steps that need to be made and the approximate dates of those steps, and to the extent that you can, a cost analysis by year. And I know it will be somewhat difficult to do, and in some of the dates you will have to only estimate, but I think it is very important for us to have and for you to have.

In the early days of the nuclear waste program, there was a lot of slippage in time, a huge amount, and every time DOE would come up to talk to us, there would be a new slippage in time, and we would try to compare that to what was supposed to have been done, and nobody quite knew what was supposed to have been done when. But I think this would be very helpful to us. For one thing, in future years, if they are making the dates, we will know that. If they are not, then we will at least have something to compare it to, and I think this would be a useful exercise for your department as well.

Mr. KAY. Yes, sir. As I mentioned, we are currently in the process of preparing a draft to the Mission Plan amendment which will be out for public comment later this spring, and to the best of our ability, we are going to have the milestones in there and the critical path items for the repository and the MRS for the Integrated Waste Management System.

The CHAIRMAN. All the way between here and opening.

Mr. KAY. Yes, sir.

The CHAIRMAN. Well, very good. That will be very helpful.

There was a report by Jerry Syzmanski, a DOE scientist, raising some concerns about the Nevada site, and I understand that the State of Nevada was very upset about this and said that there had been some squelching of the report.

Can you tell me about that report?

Mr. KAY. Jerry Syzmanski is a geologist with the Department of Energy, currently working at the Nevada Operations Office. I believe prior to that he worked with the Salt Program, which was part of the waste management program also. Jerry has some differing opinions on what might happen tectonically at the Yucca Mountain site. He has been working on this theory for some time. It is not something that was new. In fact, Don Vieth, who was the project manager when he testified before this committee last June, did not mention Mr. Syzmanski by name but did talk about the fact that there are these other theories that we are having to look at in terms of the suitability of the site.

Mr. Syzmanski's report was published in late December, and I think that was the report——

The CHAIRMAN. Published by whom?

Mr. KAY. It was published by Mr. Syzmanski, but it was published by the Department in the sense that we had asked him to do this. Don Vieth, the former project manager, and then later, Carl Gertz, who is the current project manager of the project in Nevada, asked Mr. Syzmanski to take the time to put his concerns in writing, which he had not done prior to this past fall.

His theory is currently under review by a peer review panel which is an internal peer review panel made up of scientists from Los Alamos, Livermore, and other areas. I believe Congressman Sharp asked the National Academy of Science the Frank Parker panel, to take a look at this also, and they talked to Mr. Syzmanski here in Washington last week.

We are giving very good consideration to his comments. Most of the concerns that he raised were already incorporated into the Site Characterization plan consultation draft. We are not addressing them as one block of issues, though, as we would just stop everything and do this, but we plan to address these as part of the full site characterization program.

Now, I believe that is a responsible way to proceed.

The CHAIRMAN. So it was a study commissioned by DOE, paid for by DOE, the results of which are published by DOE, and you are following up on all of these concerns as part of your studies.

Mr. KAY. Yes, sir, and they did arise, though, from the differing opinion that Mr. Syzmanski had about the activity that could take place in the future at the site. As we go through the program we are going to have differing professional opinions among different scientists because we have over 800 scientists involved just in the repository program in Nevada alone, sir.

The CHAIRMAN. Mr. Thompson, do you believe their peer review of this particular issue is adequate?

Mr. THOMPSON. We are having that as a focus of the workshop we have got scheduled in April to look at aspects of the different alternative models. I think that is a very healthy approach. It is going to be open to the public and is one which I think will address the issue.

The key to this particular issue is the ability to have a site characterization plan gather the data that will either support or not support the various models. One of the issues we have discussed is that there are alternative models for the site, and it is important that the site characterization plan gather data to support one of those models versus the other.

And I think that is where we are both in agreement that that is the important thing, and I think Mr. Syzmanski is also in agreement that the next step is to get the data to either prove or disprove the analysis.

The CHAIRMAN. But the process employed by DOE you think is a proper process to get to the truth of what the data will reveal.

Mr. THOMPSON. We are comfortable with the process that currently is in place, yes, sir.

The CHAIRMAN. Thank you.

Well, I want to encourage DOE to continue what you are doing. It is very important, as you know, to not only do this thing correctly, but to have it public, have every concern fully addressed, fully explored, and the results fully supported by the facts and the data.

And I know I am saying something that you are already aware of, but I think it bears repeating, and that is that the slightest little withheld fact or report or discouraged statement can lead to a great many difficulties. So we want to hire all of the disparate scientists that there are so that all the theories can be explored and be fully confident in such a way as to satisfy the people of Nevada

if the site is eventually okayed there, and to satisfy everyone else if it is not, that we have done the right thing.

Let me ask you about the Syzmanski report. I know you haven't fully researched it yet and have all the data, but do you expect—are these concerns difficult concerns, or do you expect that they will be disproved by the data?

Is there any way to tell at this point?

Mr. KAY. Well, the technical review that is going on in the peer review group and the technical workshop that Mr. Thompson referred to that will be conducted in April will not provide the final answers. This is a technically difficult question.

Once we get into the site characterization process, complete the two exploratory shafts, connect the shafts and do the in-situ testing, I think we will be able to gather some data that will give us better information. Based on the information that I have received from a number of geologists and people who experts in the field, the probability is very low that this theory would be something that would take place.

The CHAIRMAN. What is his theory?

Mr. KAY. His theory is there is a coupled stress heap, almost like if you have an aquifer that is just under the—there is an aquifer under the Yucca Mountain site—that some tectonic action would move the aquifer and make it move up through and saturate the actual repository horizon. Mr. Syzmanski even says there could be some very dramatic activity that would actually drive it through there very strongly.

There is just not the evidence at this time to say that that is an activity that would take place. He bases his theory primarily on some calcite silicite findings that he has found in some trenching activity in the vicinity of the Yucca Mountain site. What we need to determine is, did this come from volcanic overflow, the calcite silicite deposits, or did they come from upward thrust from prior tectonic activities. And this is something that once we actually get down to the horizon of interest, we will be able to determine with greater detail.

The CHAIRMAN. And if it was not caused by volcanic activity, then that will be reassurance that the theory is not correct?

Mr. KAY. Yes, sir.

The CHAIRMAN. And the scientists seem to be satisfied that they can determine this as a matter of fact.

Mr. KAY. Yes, sir, with a fairly high degree of probability. When you are speaking with scientists, they are going to put probabilities on it.

Senator HECHT. Mr. Chairman, could I just ask a question in that regard?

The CHAIRMAN. Yes, Senator.

Senator HECHT. What effect to the atomic explosions that we have now underground, what effect would that have on that?

Mr. KAY. Have on the site itself?

Senator HECHT. No, on what Syzmanski is saying? You said it can go up, the aquifer.

Mr. KAY. The aquifer could rise.

Senator HECHT. Yes.

Mr. KAY. I know of no effect that the weapons tests that have been conducted, have on this.

Senator HECHT. Will that take that into your study?

Mr. KAY. Oh, we plan to look at the effect that the weapons tests would have on the characterization activities, yes, sir.

Senator HECHT. You know, we have an active volcano less than 100 mils, about 100 miles away from there.

Mr. KAY. We will be taking that into consideration, sir.

Senator HECHT. Thank you, Mr. Chairman.

The CHAIRMAN. The National Academy of Sciences, of course, has been involved in reviewing the Nuclear Waste Program for several years, and my judgment is that that has provided very valuable advice.

Does the Department intend to continue using the Academy in this program?

Mr. KAY. Yes, sir. As you are aware, the Amendments Act calls for the National Academy of Sciences to nominate to the White House no less than 22 individuals from which the White House would select 11 for a Nuclear Waste Technical Review Board that would then be on a rotating basis of four years per member, up to one year after the repository begins operation.

Once they are appointed by the White House, they no longer have an association with the National Academy formally. We feel like the formal relationship we have had with the National Academy of Sciences, the high-level waste group, has been very beneficial to us because we can go to them, ask them technical questions, have them review them as an objective body, and we would like to continue this interaction with the National Academy.

The CHAIRMAN. What lawsuits, if any, does the Department believe will not be mooted by the 1987 amendments? In other words, what lawsuits will continue?

Mr. KAY. Well, if I might refer to some of my notes here on some of the legal activities.

The lawsuits were divided basically into four different types of cases, the environmental assessment cases, the guideline cases, the second repository cases, and then the fee cases.

The environmental assessment siting cases, we filed a motion to dismiss 23 of 24 of those suits. The one that we have not filed to dismiss is the one associated with Nevada, their suit, because we feel that one is still a relevant suit.

The guidelines suits, we have filed to dismiss 10 of 11 of those. There again, the Nevada case still stands.

We have filed to dismiss all of the second repository suits and hopefully will be hearing back shortly on those.

I think we are going to find that the State of Nevada will continue to litigate very heavily because this is a very process driven program, and throughout the life of the program——

The CHAIRMAN. What are the questions involved in the Nevada litigation?

Mr. KAY. Well, the current cases they have are on the adequacy of the environmental assessments and on the adequacy of the guidelines we have for siting a repository. We believe that the environmental assessments—which were published in 1984 in draft form and went through the 18-month review prior to their going

final in May of 1986—were adequate for the purpose they served at that time. We also think that the siting guidelines that we have are good guidelines which received concurrence from the Nuclear Regulatory Commission. They are good guidelines for the establishment of a repository.

The CHAIRMAN. Well, as a legal matter, the fact that Nevada has been chosen in statute, if they found that the guidelines for picking Nevada as one of the three states, what do your lawyers advise would be the result of that litigation, if it were successful?

Mr. KAY. Our lawyers advise us that if that were the case, which they do not think would be the case, that we could continue our site characterization activities that we have under way at Nevada, and that we would be required to revise the guidelines appropriately.

The CHAIRMAN. Guidelines for——

Mr. KAY. The siting of a repository.

The CHAIRMAN. Oh, for the siting of the final repository.

Mr. KAY. Yes, sir.

The CHAIRMAN. Oh, I thought you meant the guidelines for the picking of the three sites.

Mr. KAY. No, sir.

The CHAIRMAN. That is mooted, is it not?

Mr. KAY. That is mooted, yes, sir.

The CHAIRMAN. All right.

Has the Department had any discussions with any states that might be interested in hosting an MRS facility?

Mr. KAY. Up to this time, sir, we have not received any formal requests for assistance or discussion from any States.

The CHAIRMAN. What is the Department's current schedule for initiating MRS site survey work?

Mr. KAY. We cannot begin any site survey work until after the time that the MRS Review Commission submits their report, which is currently scheduled for June of 1989, when that report is due back to you, sir.

The CHAIRMAN. I have a number of other questions in writing. At this time I will call on Senator Hecht.

Senator HECHT. Thank you, Mr. Chairman.

First of all, this letter was given to me that I wish to be submitted for the record to you, Mr. Kay.

The CHAIRMAN. Without objection.

[The letter follows:]

RICHARD H. BRYAN
Governor

STATE OF NEVADA

ROBERT R. LOUX
Executive Director

AGENCY FOR NUCLEAR PROJECTS
NUCLEAR WASTE PROJECT OFFICE
Capitol Complex
Carson City, Nevada 89710
(702) 885-3744

March 23, 1988

Mr. Charles E. Kay
Acting Director
Office of Civilian Radioactive
Waste Management
U.S. Department of Energy
Washington DC 20585

Dear Mr. Kay:

Governor Bryan has asked me to reply to your letter of February 18, 1988.

Please be assured that the Nevada Nuclear Waste Project Office (NWPO), as the agency designated by State law to oversee DOE's high-level nuclear waste disposal program, remains committed to working cooperatively with DOE staff in reviewing and monitoring DOE's site characterization planning process and the Department's approach to evaluating the suitability of the Yucca Mountain site as a potential repository location.

As you know, the State of Nevada has consistently sought to work cooperatively with DOE, not only with regard to the Site Characterization Plan (SCP) but also with regard to the development of prior site selection/site evaluation documents. Unfortunately, DOE's past record of essentially ignoring State comments and concerns does not provide a reason to expect that State suggestions and recommendations with regard to the SCP will be well-received by DOE.

At the very beginning of the Nuclear Waste Policy Act (NWPA) repository program, Nevada (and other states) worked long and hard with DOE in an attempt to help the Department develop siting guidelines which would be objective and would assure that only technically sound sites would be chosen for characterization. Despite months of work, DOE discarded State recommendations and proceeded with a set of guidelines which were (and are) overly subjective and designed to assure that certain preselected sites would be chosen for characterization.

P.02

Nevada experienced much the same result with regard to the draft Environmental Assessment (EA) for the Yucca Mountain Site. In that instance, State requests for early involvement in the development of the EA were rebuffed by DOE. When the draft document was finally released, Nevada provided over 800 pages of comments and suggestions, almost all of which were ignored in the final version of the EA.

I could site example after example of instances when the State has attempted to cooperate with DOE only to discover that our input and comments would be, in the final analysis, largely ignored.

Despite this history of what could be termed bad faith on the part of DOE, Nevada has continued to participate with the Department in the site evaluation process. We have met with DOE staff on numerous occasions to review DOE's draft Socioeconomic Monitoring and Mitigation Plan (SMMP), draft Environmental Monitoring and Mitigation Plan (EMMP), draft Environmental Regulatory Compliance Plan (ERCP), various transportation plans, and other DOE documents. At the present time, the NWPO is in the process of assisting DOE with the socioeconomic impact report DOE is required to prepare under Section 175 of the Nuclear Waste Policy Amendments Act of 1987 (NWPAA). We are working closely with DOE/WMPO staff in Las Vegas to provide State-developed socioeconomic data which will enable DOE to meet the NWPAA Section 175 requirements.

The concerns voiced recently over DOE's consultative draft SCP (CDSCP) do not, in any way, reflect an unwillingness on the State's part to cooperate in the development of an adequate site characterization planning process. To the contrary, our objections to the CDSCP derived directly from the perception that DOE was not committed to full and open cooperation with the State and that the CDSCP appeared to "piecemeal" the site characterization process by presenting a generalized overview of site evaluation plans without providing detailed work plans or the related Environmental Program Plan. (When the NWPO agreed to DOE's plans for CDSCP review, it was with the understanding that the draft would include specific work plans and would be accompanied by the required environmental document. DOE/WMPO Project Manager, Carl Gertz, had provided assurances that these conditions could and would be met.)

Despite what we perceive to be a fundamentally inadequate draft of the SCP, the NWPO is participating with DOE and NRC in workshops that are scheduled for reviewing the CDSCP document. We are continuing our cooperative involvement with DOE or the SMMP, EMMP and ERCP as well as in the broader areas of socioeconomic and transportation analyses.

In order to make the draft SCP review process a meaningful and productive one, it is essential that the detailed work plans for proposed site characterization activities be available for review in conjunction with the CDSCP. I would hope that your office will reconsider its decision to withhold those plans and make them available to State and NRC reviewers as soon as possible. In addition, DOE could greatly enhance State and public confidence in the characterization process by allowing State access to draft technical reports and other documents pertaining to site suitability studies prepared by DOE contractors.

Please be assured that the Nevada Nuclear Waste Project Office will continue to wok with DOE to assure that the Yucca Mountain site characterization process is conducted in a sound and objective manner.

Sincerely,

Robert R. Loux
Executive Director

RRL/JCS/mm

Senator HECHT. The first question I had—this is the state's position on consultation with the Federal Government.

The first question I had was, which I do not think we have an answer now, I understand, when will the administration appoint a nuclear waste negotiator as described in the Nuclear Waste Amendments enacted last December?

Can you enlighten us what is happening on that?

Mr. KAY. I am not aware of all the activities that are taking place right now, but the Secretary Herrington believes that the negotiator still has a very active role that he can play. I feel it is good that we have not, you have not received anything from the White House asking for the repeal of the negotiator.

The CHAIRMAN. If I may interrupt at that point.

Senator HECHT. Sure.

The CHAIRMAN. Is it your understanding that legislation will not be sent up?

Mr. KAY. I have not received any word to that effect, but I am pleased that you have not received anything.

The CHAIRMAN. All right.

Senator HECHT. Well, please notify us. Do not let us read about it in the newspaper, okay, since it is a very sensitive issue.

What is the Department doing to implement the Hecht amendment requiring a report on impact assistance for Nevada in connection with the repository?

Mr. KAY. We are currently developing a methodology by which we will have that report—the section 175 report—in December of this year, I believe, is when the section 175 report will be due. We plan to discuss that with the State prior to actual development and submission of the report.

Senator HECHT. All right.

More than two months ago you received a letter from me signed by 10 other Senators, including three other Members of this committee and four Members of the Appropriations Committee. You received a similar letter signed by 13 Congressmen. Both these letters urged the Department to implement the new provisions of the Nuclear Waste Law that require research on sub-seabed disposal of nuclear waste. Specifically, the letters asked the Department to make $5 million available out of the Nuclear Waste Fund to get things started. The letter also indicated that we want the Woods Hole Oceanographic Institution in Massachusetts to have the lead for the sub-seabed consortium.

When will the Department respond to our letter?

[The letters follow:]

I

PAUL TRIBLE
VIRGINIA

United States Senate

WASHINGTON, DC 20510

April 17, 1986

Honorable John S. Herrington, Secretary
United States Department of Energy
1000 Independence Avenue, N.W.
Washington, D.C. 20585

Dear John:

We are concerned about the Department's announced intention to terminate the U.S. contribution to the international research and development project for the subseabed disposal alternative for permanent disposal of spent fuel and high-level nuclear wastes (HLW). This important study has been pursued since 1974, with the assistance and participation of nine other countries and the Commission of the European Communities.

Section 222 of the Nuclear Waste Policy Act of 1982 (NWPA) requires DOE to continue and accelerate study of alternative means and technologies for permanent HLW disposal. From all indications, the subseabed option offers many attractive features, including environmental, economic, political and national security benefits. In addition, the prospect of sharing the cost of this alternative with our international cooperators makes it a very cost-effective use of Federal funds. To cancel our modest $10-12 million annual investment at a time when this research is nearing maturity would be a mistake. Termination of the U.S. contribution is likely to lead to the collapse of the international project, leaving the U.S. and all other countries using nuclear power completely dependent upon the success of land-based geological disposal as a solution to the high-level waste problem.

We feel it is premature for DOE to make any absolute representation to members of the International Seabed Working Group to the effect that the U.S. portion of the funding will not be provided for the fiscal year 1987 hopefully leading to feasibility determination in 1991.

We thank you for your kind attention to this important matter and look forward to working with you to develop safe, cost-effective options for high-level nuclear waste disposal.

Sincerely,

TRIBLE

WARNER

HUMPHREY

RUDMAN

BOSCHWITZ

KASTEN

CHAFEE

PELL

GOSE

THURMOND

HECHT

NUNN

McCLURE

DOMENICI

GORTON

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ABDNOR

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D. MICHAEL HARVEY, CHIEF COUNSEL
FRANK M. CUSHING, STAFF DIRECTOR FOR THE MINORITY
GARY G. ELLSWORTH, CHIEF COUNSEL FOR THE MINORITY

United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, DC 20510-6150

January 20, 1988

The Honorable John Herrington
Secretary
Department of Energy
Washington, D.C.

Dear John:

The recently enacted Nuclear Waste Policy Amendments Act of 1987 requires that you "establish a university-based Subseabed Consortium involving leading oceanographic institutions, national laboratories, and other organizations to investigate the technical and institutional feasibility of subseabed disposal." We recognize that this provision represents an innovative approach to research and wish to offer our guidance on how to implement Section 224 of the Act.

As stipulated in Section 302 of the Act, use of the Waste Fund is authorized for all activities conducted under Section 224. For fiscal year 1988, we suggest that you allocate $5 million for the Subseabed Consortium. We understand that it will cost approximately $250 million to demonstrate the feasibility of subseabed disposal by 1995 as required under the Act, and anticipate the following outyear budget requests for the Subseabed Consortium.

FY	1988	1989	1990	1991	1992	1993	1994	1995	Total
	$ 5	25	35	35	35	40	40	35	$250

It is our understanding that seven of the leading oceanographic institutions have taken the first steps toward forming a Subseabed Consortium. The Woods Hole Oceanographic Institution has agreed to organize the Consortium, which initially includes Lamont-Doherty Geological Observatory of Columbia University, the University of Rhode Island, the University of Washington, Oregon State University, Scripps Institution of Oceanography of the University of California, and Texas A&M University. These institutions and other organizations that have been involved in subseabed disposal research have agreed to participate in the Woods Hole-based Consortium.

The Woods-Hole Oceanographic Institution has been involved in subseabed disposal research since its inception, and is the appropriate lead institution for the Subseabed Consortium. Woods Hole is an internationally recognized leader in oceanographic research, and can provide the scientific leadership, administrative support, and management for the Consortium. We urge you to contact the Woods Hole Oceanographic Institution and proceed with establishing the Subseabed Consortium with an initial grant of $5 million.

Sincerely,

Clair Fey
Chic Hecht
Jake Garn
Bob Adams
Phil Gramm
Pete V. Domenici
Jordan Humphrey
Rudy Boschwitz
Dan Evans
Harry M. Reid
Jim McClure

Congress of the United States

February 1, 1988

The Honorable John S. Herrington
Secretary
U.S. Department of Energy
Washington, DC 20585

Dear Mr. Secretary:

The recently enacted Nuclear Waste Policy Amendments Act of 1987 requires that you "establish a university-based Subseabed Consortium involving leading oceanographic institutions, national laboratories, and other organizations to investigate the technical and institutional feasibility of subseabed disposal." We recognize that this provision represents an innovative approach to research and wish to offer our suggestions on implementation of Section 224 of the Act.

The purpose of Section 224 is to assess the feasibility of subseabed disposal as a back-up to the land repository program and as an international option. With the decision to characterize only the Nevada site, subseabed disposal becomes the primary back-up for the land-based storage and disposal program, and also would eliminate the need for a second land repository. As an international option, subseabed disposal would avoid the need to accept foreign waste for disposal in a U.S. repository and would contribute to nonproliferation objectives by providing the means for a verifiable closing of the nuclear fuel cycle.

The university-based consortium approach is intended to enhance the credibility of subseabed research. Given the controversial nature of radioactive waste disposal, the consortium offers the best means for building consensus among the scientific community and educating the public about subseabed disposal. The consortium also is a cost-effective method for demonstrating the feasibility of subseabed disposal.

As stipulated in Section 302 of the Act, use of the Waste Fund is authorized for all activities conducted under Section 224. For fiscal year 1988, we suggest that you allocate $5 million for the Subseabed Consortium. We understand that it will cost approximately $250 million to demonstrate the feasibility of subseabed disposal by 1995 as required under the Act, and anticipate the following outyear budget requests for the Subseabed Consortium:

FY	1988	1989	1990	1991	1992	1993	1994	1995	Total
	$5	25	35	35	35	40	40	35	$250.

It is our understanding that seven of the leading oceanographic institutions have taken the first step toward forming a Subseabed Consortium. The Woods Hole Oceanographic Institution has agreed to serve as the lead institution to set up the Consortium. The Consortium, comprising Lamont-Doherty Geological Observatory of Columbia University, the University of Rhode Island, the University of Washington, Oregon State University, Scripps Institution of Oceanography of the University of California, and Texas A&M University, and other organizations, such as Sandia National Laboratories, that have had major roles in the past in subseabed disposal research will oversee the management of the program.

The Woods Hole Oceanographic Institution, Sandia National Laboratories and other members of the proposed Consortium have been involved in subseabed disposal research since its inception. We urge you to contact the Woods Hole Oceanographic Institution and proceed with establishing the Subseabed Consortium with an initial grant of $5 million.

Sincerely yours,

TIM VALENTINE
Member of Congress

MANUEL LUJAN, JR.
Member of Congress

MARCY KAPTUR
Member of Congress

ARLAN STANGELAND
Member of Congress

WALTER B. JONES
Member of Congress

HARRIS W. FAWELL
Member of Congress

RALPH M. HALL
Member of Congress

DUNCAN HUNTER
Member of Congress

BILL LOWERY
Member of Congress

SID MORRISON
Member of Congress

BARBARA F. VUCANOVICH
Member of Congress

MIKE LOWRY
Member of Congress

Beau Boulter

BEAU BOULTER
Member of Congress

Mr. KAY. The Office of Sub-Seabed was designated by the Amendments Act in December to fall under the Office of Energy Research. The Office of Energy Research, in my understanding, is currently putting together a budget. They will assign several people to the function. They have someone actually leading the effort, but an acting Director, an SES member, will be appointed, according to Dr. Decker within the next week or so.

I am not aware of a lot of the specifics of what they will do within that office as it falls outside the purview of the Office of Civilian Radioactive Waste Management at this time, but I know that they are responding to the Amendments Act and your request.

Senator HECHT. The first time I heard about it, I thought it was a request that was just way beyond reason. Then I spoke to Dr. Teller and numerous other nuclear physicists, and they said yes, it absolutely requires further research, and there could be possibilities down the line, so please look into that.

When will the Department contact Woods Hole about formally establishing the consortium?

Do you have any information on that?

Mr. KAY. Well, I again have to refer that to Dr. Decker, who could give you an answer on that. But I am not sure that the Department would have the authority to directly contact Woods Hole, as they will have to go out with some type of RFP. You cannot just go out and automatically seek a private entity.

Senator HECHT. Except the fact that they have done such tremendous research.

Mr. KAY. I realize that, sir.

Senator HECHT. And probably they have better research facilities, they have mapped the entire ocean floor for our submarine fleet, which is not classified.

Will the Department comply with our request and fund the program out of the Nuclear Waste Fund?

Mr. KAY. It is my intention that the program should not be funded out of the Nuclear Waste Fund. This is generic research, and that the Nuclear Waste Fund should be funding the site specific activities related to the development of the integrated waste management system.

Senator HECHT. Well, we will have to go into that further at another time. I will have to check on that funding. And I am not sure you are correct.

How will the Department make sure that all the limited funds available are in fact put to good use by the scientists instead of absorbed by the Department's bureaucracy here in Washington?

Mr. KAY. We have a very detailed budget program and management system in place which I think provides for very good management of the activities. We are currently seeking a managing and operating contractor for the program.

When you look at the waste management program that we are developing, the repository activities, the site characterization activities that are under way in Nevada are one part of the program. There are the MRS activities, the massive transportation activities, the development of a commercial infrastructure, the interaction with over 100 reactors, the development of a waste package transportation cask designs, the activities that are going on in Nevada

are site characterization specific. We do not have a repository actually in Nevada until we complete the site characterization. We feel like that the team of people we have there should be focusing in on those activities in terms of the site characterization and not working with the other parts of the program.

We think that by bringing this managing and operating contractor on under the management of the DOE here at headquarters and the DOE project offices will help us better manage each specific part and make all of the pieces fit together better.

Senator HECHT. Do you feel the Department will meet or beat its mid-September deadline for the report on sub-seabed research?

Mr. KAY. I cannot comment on that. The Office of Energy Research is preparing that report, sir.

Senator HECHT. Has the Department given Nevada the opportunity to take advantage of the Hecht amendment to allow for on-site state oversight of all aspects of site characterization, and if so, what has been Nevada's response?

Mr. KAY. We have on numerous occasions asked the State of Nevada to provide a technical representative to participate with us. The State of Nevada has only what I would call PR-type, or non-technically-oriented people located in Las Vegas where DOE and contractor offices are located.

We would like for the State to actually locate technical people in Las Vegas when we actually begin site work out at Yucca Mountain. We will be very happy to provide these technical people with office facilities so that they can fully participate in the program because we believe this is a very important component of the program, to have the technical people from the State participating.

Senator HECHT. In other words, you do not feel that the people of Nevada have now real technical people. You said they are PR people.

Mr. KAY. They do not have anyone located in the city of Las Vegas where we are doing our work right now, where our contractors are located, where our DOE people are. I think they have some very good technical people in the State of Nevada, but I think they should also have them co-located in the same vicinity where our people are, that they actually come out to the site when we begin our site work. They need to be sitting across the table from us in the workshops that we are conducting with the NRC.

It is fine for them to be there as observers, but it would be much more helpful for us while we have the site characterization consultation drafts out in the workshop process to have the State sitting across the table from us giving us their technical exchanges. The face to face comes much easier than supplying answers in writing. We can get down and resolve issues much easier.

Senator HECHT. Bob Loux, do you feel he is a technical man?

Mr. KAY. I believe Mr. Loux is a lawyer, sir.

Senator HECHT. So you are classifying him more as a PR man than a technical man?

Mr. KAY. No, sir, I would say that he has a good——

Senator HECHT. You mentioned PR people.

Mr. KAY. Well, that is mostly what we hear in Las Vegas. The State does not have any technical people located there from the State. I think it would be very good so that they could be interac-

tion with our technical people. I mean, I think that would be very beneficial to the program, to the State; the State would be well served by that.

Senator HECHT. They are asking for something like, you mentioned $23 million?

Mr. KAY. $23 million is their grant request for next year. We just received that.

Senator HECHT. I just heard about that from here.

But there is no technical work involved.

Mr. KAY. I am sure there will be technical work involved in that, and they will be asking for technical programs. We will be happy to have the State actually begin to have technical people, but we think now is the time to do that. We talked to the State last fall, all three of the States at that time that were involved in the site characterization activities. We were looking for this consultation draft period of the Site Characterization Plan, and we wanted to have the technical exchange.

But I think it will be a very healthy process. To the extent that they want to conduct their own technical work and have their own site characterization program, that is something that we will have to look at very carefully because two people cannot be doing exactly the same thing on the same spot of ground.

Senator HECHT. Thank you. Very interesting comment.

Mr. KAY. Yes, sir.

Senator HECHT. What discussion has the Department had with the city of Las Vegas or Clark or Nye Counties with respect to a benefits agreement or impact assistance in connection with the repository program?

Mr. KAY. Well, the Amendments Act, as you know, now allows for Nye County, which is the county of concern, and adjacent counties, to request grants on their own. We have had some inquiries both from Clark County, from Nye County and from several of the local towns around there about whether the Department would be receptive to furnishing grants directly to them. That is up to those governments to request that, but we would openly receive those requests.

Senator HECHT. You realize Nye County is up against a tremendous financial hardship now because of the Department of Energy's nuclear testing, and what it is costing the Sheriff's Department to manage these protesters, and they have been unable, to the best of my recollection, to get any money from the Department of Energy, and that we have got tremendous, tremendous problems because they are out in the hundreds right now.

If they are not getting money for this, they are very concerned about the future.

Could you comment on that?

Mr. KAY. Well, we will do our best. We will be developing payments equivalent to taxes and other mechanisms as we work with the State and with the counties and local governments. I cannot give you any specifics, Senator, because we have not really gotten down to discussing that with the local officials to that level of detail.

Senator HECHT. I would really appreciate, especially Nye County because you might have to go out there and round up the protest-

ers. They have run out of money. It is costing us a lot of money in the State to do that.

Also, are you aware that Bullfrog County was declared unconstitutional?

Mr. KAY. Yes, sir.

Senator HECHT. Any comments on that?

Mr. KAY. No, sir, that was an action of the State to create that entity.

Senator HECHT. That was, to all of the people, for the record, that was created in the middle of the night, the last night of the Nevada legislature, and unfortunately it was perceived in Washington and elsewhere as an open invitation for a nuclear repository.

What is the Department doing to implement my transportation amendments that are contained in the Nuclear Waste Amendments?

Mr. KAY. We are developing a program for transportation, I hope, that will address the transportation issue as a whole for the nation over the long term.

As you know, we do not plan to actually start moving any waste to the repository for about 15 years. The amendments to the Nuclear Waste Policy Act call for us now to be able to provide emergency preparedness training, for instance, down to the community, local government level.

We already have in place an infrastructure of work that we are doing with regional groups of States which over time we would like to let those groups begin to focus it to the State groups, and the States within their own bodies so that three-to-five years prior to the actual beginning of the shipments of the spent fuel and the high-level waste, we will be able to develop the emergency preparedness infrastructure at those levels of government.

In terms of the certification of the casks by the Nuclear Regulatory Commission, this is something that we had planned to do all along, and we feel that transportation is something that is going to be viewed by more people in this nation in terms of its relationship with our program. The nuclear industry in the past has had a very safe record and we intend to do what we can to continue that record and enhance it as much as possible.

Senator HECHT. Now, in New Mexico, Senator Domenici, a year or two, I forget, in the time since I have been in the Senate, got a large sum of money for the roads up in to and leaving the WIPP project.

Are you aware of that?

What was that figure, do you remember? $43 million something.

I think he is asking for more now. That was just a small area.

Do you have any idea what it is going to take to upgrade the roads around America to this nuclear repository, if it goes to Nevada?

Mr. KAY. That is something that we will have to look at as we get more specifically into what those routes would be. Once we are able to define where the MRS would be, and what the relationship of that would be to the repository, we would be able to better define where the routes would be.

As far as the movement of waste from an MRS facility which we still believe is a very important part of the integrated waste man-

agement system, to a repository, we would plan to do that by large unit train shipments. It would require upgrading some tracks, most likely, and the routing of the railroad system through Nevada that would be consistent with the concerns of the people in the State.

Senator HECHT. Last year I went down and visited the Surry nuclear power plant in Virginia. They have a sister—they are filling up all their facilities. They have a sister plant about 150 miles away, and they tried to move the spent nuclear fuel rods to that sister plant, and they were unable because of public reactions to it to do it, and they had to have the first dry cask storage facility. I think they are in over $38 million on that.

Do you not feel transportation of high-level nuclear waste is going to cause tremendous problems, unbelievable, all around America?

Mr. KAY. I think it is going to be something of concern. I think the transportation of hazardous materials is going to cause a lot of concern around the United States over the next 10 or 15 years. The transportation of nuclear waste will be one of those issues that we have to address, but it is not something that we can ignore because the fact is, there are over 100 operating reactors in this nation that have spent fuel located at them. The pools are filling up. Many of the reactors will be having to look at other methods such as dry storage, such as the one you saw at the Surry plant which the Department participated with Virginia Power in a cooperative agreement to establish and license.

Senator HECHT. What was the final cost, $38 million or something like that?

Mr. KAY. I do not have the final cost, sir. Just a moment.

[Pause]

Mr. KAY. Mr. Klein informs me that through completion it is about $38 million, of which DOE funded 25 percent.

Senator HECHT. That is pretty close.

What is the timetable on the location of an MRS facility?

Mr. KAY. An MRS facility, as there were new linkages placed by the Amendments Act, will not be able to start doing site specific activities in terms of looking for sites until after the MRS Review Commission submits their report to Congress in June of 1989. We cannot actually name a site until such time as we recommend to the President a site for a repository. Our best estimate of that is 1995, which we feel fairly firmly we can stay with. We cannot actually start construction of the site until such time as we have received construction authorization for a repository from the NRC, which right now is scheduled to be 1998.

Senator HECHT. Last month I submitted a number of questions for the record in connection with this committee's oversight of the Department's budget.

Why have I not received any response to my questions?

Mr. KAY. I believe I have, last Thursday or Friday, had a first review of those answers myself, and so you should be receiving them. They have to go through a departmental concurrence, and so the committee should be receiving those back shortly.

Senator HECHT. Thank you, and thank you, Mr. Chairman.

The CHAIRMAN. Senator Evans.

Senator EVANS. Thank you, Mr. Chairman.

Mr. Kay, let me pursue the MRS.

It is my understanding that three names have been submitted to Congress recently.

Mr. KAY. That is correct.

Senator EVANS. And they are prepared to undertake their work.

Do you read the Act—how do you read the Act in terms of the flexibility of that MRS Commission? In other words, how far can they go in their analysis and their recommendations back to you? Is it in your view confined to just the question of building an MRS as part of the specific move toward a deep repository, or can they recommend, or do they have the freedom to recommend alternatives in terms of how long material ought to be stored in an MRS, what effect that might have on the final cost of deep repositories?

Mr. KAY. Well, we do not have any control over what the MRS review group would be doing because they report to you.

Senator EVANS. I understand you do not.

Mr. KAY. But I think they have fairly broad flexibility in terms of what they can report back to Congress.

Senator EVANS. And you think the same thing is true in terms of the requirements in the act that relate to doing the study on an MRS versus on-site or at-site storage?

Mr. KAY. Yes, sir. We are currently required to submit a report to the Congress this year on storage at site, on-site storage, the dry cask storage. We will have that report up to the Congress in October or November.

Senator EVANS. On page 9 of your testimony you mention the decommissioning of bore holes at Hanford and at other locations that are no longer under consideration.

What is the nature of decommissioning them? What do you physically do on the site, and what would be left in terms of access to any of those bore holes?

Mr. KAY. Well, we are in negotiations, one, with the Department right now whether the Defense Programs Office of the Department would like to take over some of these holes because of monitoring equipment that we currently have down in the holes. So they would pick up the costs from there on.

The bore holes that we are reclaiming, we are doing them in accordance with the State requirements. So we would plan to fill them and take them back as close as we can to their original nature.

Senator EVANS. Do you anticipate that any significant number of those bore holes would be viewed as valuable for Defense monitoring, and I am speaking now specifically of Hanford.

Mr. KAY. I know that there are several that they are looking at DC 24 and DC 25, if I am not mistaken, that Defense Programs plans to maintain as operating monitoring holes.

Senator EVANS. It is my understanding they have a significant network of monitoring bore holes for their own purposes and have had for some period of time.

Generally, how far apart are the networks that they have for Defense materials and the bore holes that were done for the civilian repository?

Mr. KAY. I am not sure we can answer that at the moment.

Let me confer, sir.

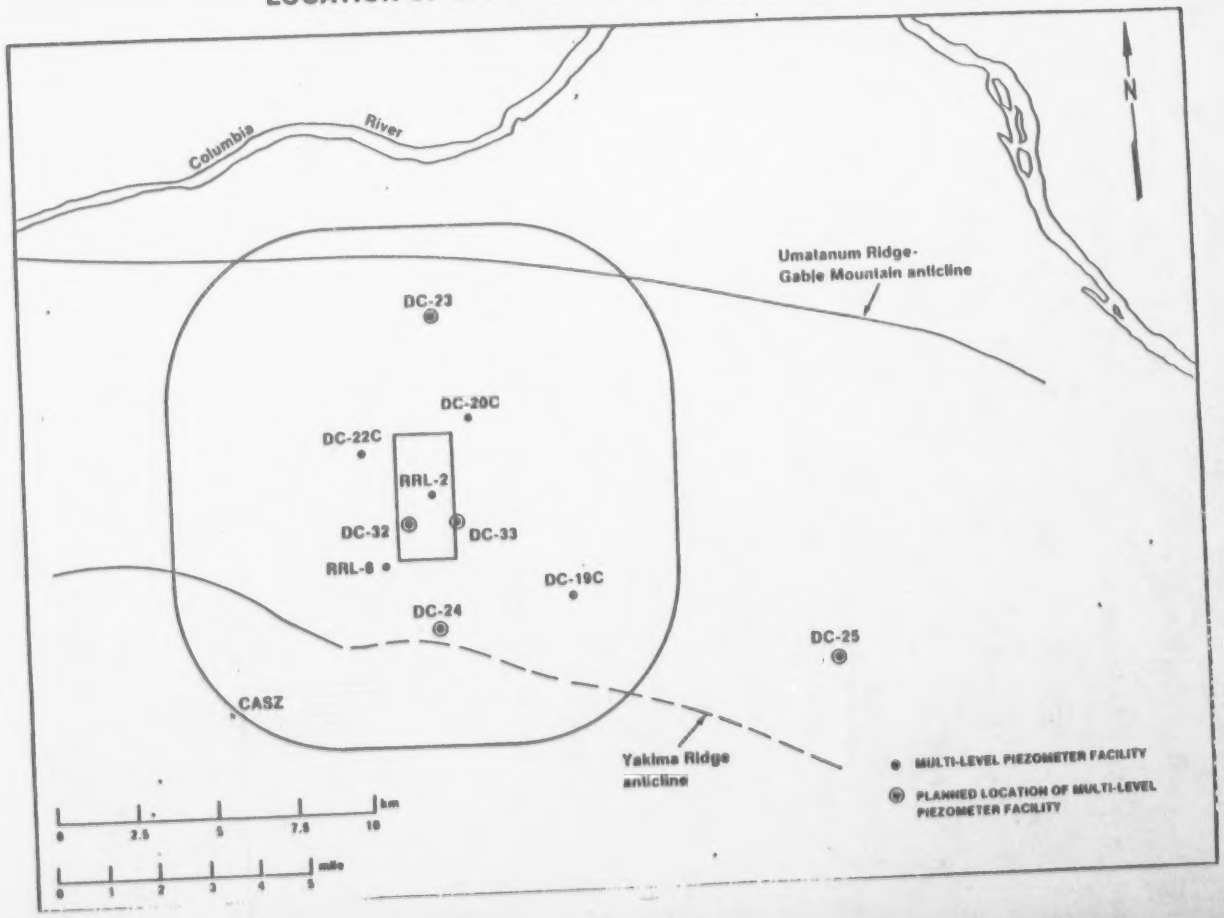
[Pause]

Mr. KAY. We can provide you a more detailed answer for the record, but Dr. Stein informs me that there are groups of holes that are clustered together that, you know, within perhaps 100 feet of each other, but once you get away from the groups, then the next group or the next bore holes would probably be at least a mile away. So they are spread out.

[The information follows:]

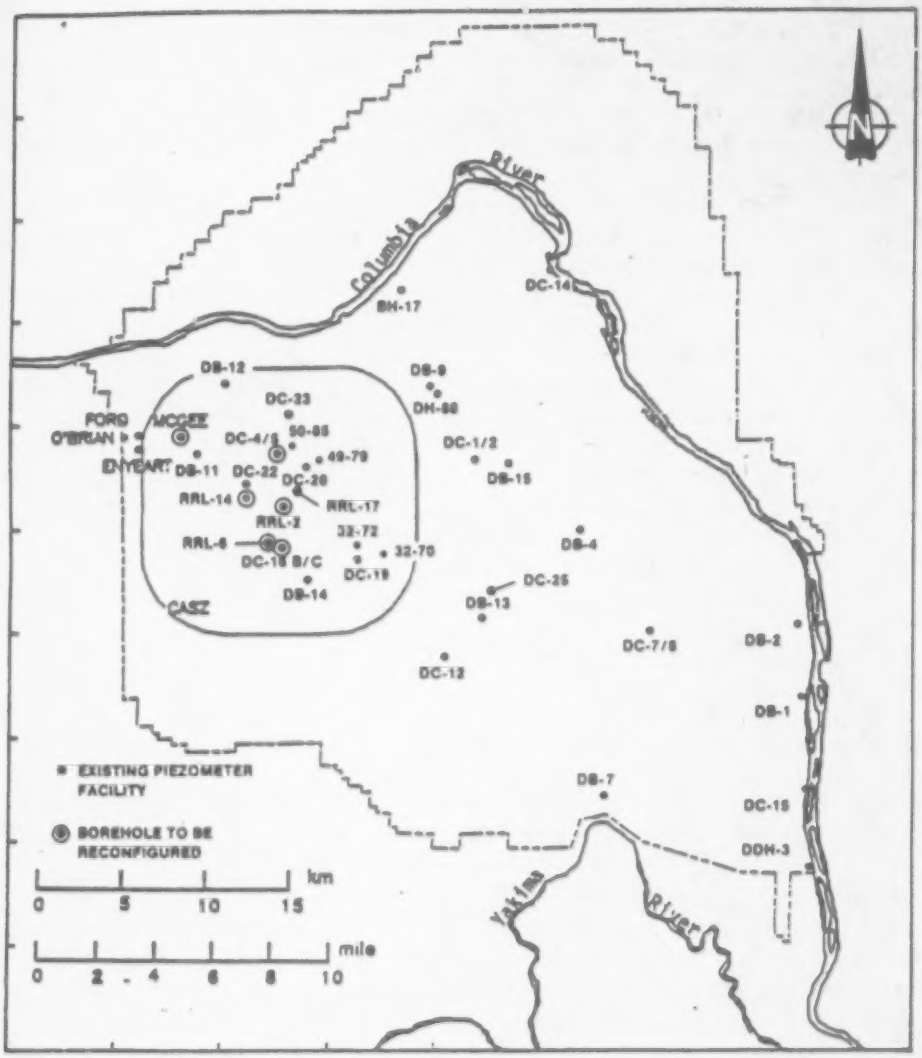
The attached location of multiple-level piezometer facilities (Figure 1) portrays the current distribution of hydraulic-head monitoring facilities on the Hanford site. It is important to recognize that the majority of these monitoring facilities are capable of monitoring the hydraulic head of only a single geologic horizon. The attached Figure 2 shows the locations of existing and planned multi-level monitoring facilities that provide data on hydraulic head in up to 7 geologic horizons at each location. The recently drilled holes at locations DC-24 and DC-25 were intended for completion as multi-level monitoring facilities. They presently are open boreholes that do not contain any monitoring equipment or equipment to isolate individual geologic horizons.

LOCATION OF MULTIPLE-LEVEL PIEZOMETER FACILITIES



FIGURE

FIGURE 2



MONITORING LOCATIONS AT THE HANFORD SITE

Senator EVANS. But the holes——

Mr. KAY. I have seen charts of the site which show how they are positioned, and there are quite a number of them.

Senator EVANS. The whole site for the civilian repository is a substantial distance from the current sites of military activity, is that not true?

Mr. KAY. Yes, sir.

Senator EVANS. I was just curious, it seemed to me that maybe—you say only two bore holes are the ones that they seem to have an interest in?

Mr. KAY. Well, I am sure there might be more, but I am aware of DC 24 and 25 which were the most recent bores holes we were looking at there.

Senator EVANS. Let me turn to the adequacy of the one mil per kilowatt hour fee. In your testimony, you show the current status of that fee, it is close to $2 billion.

What is your anticipation, or you mentioned that an analysis will be made. I presume it is almost a continuing analysis of the adequacy of that fee.

Do you have any feeling at this point as to with the modified act that we have now passed, the new requirements we have put on the fund, and the old requirements which have now been reduced by looking at only one site, whether the one mil per kilowatt hour appears to be adequate or not?

Mr. KAY. We have not actually done the total system life cycle costs for this year, and the theoretical support which is something we do on an annual basis.

But our current feeling is that the one mil per kilowatt hour fee that is currently being assessed on the utilities will be adequate for the life of the program.

Senator EVANS. What about waste canister designs? Do you have—one of the problems that was very prominent, as the Senator from Alaska will attest to, during the floor action on the U.S.-Japan Nuclear Cooperation Agreement was the design and adequacy of canisters to carry materials by air between those two countries.

What kind of sharing is there? As you go through the process of designing adequate waste canisters, as the NRC looks at the licensability and the safety of those canisters, how much exchange is there with other nations in what they have done and are doing in canister design? How far along have they gotten? To what levels of safety or testing are they carrying those canisters?

Mr. KAY. Mr. Thompson may want to address this in more detail, but there is quite a bit of sharing because many of the same companies that developed the casks for the transport of waste in Europe are the same companies that do it in the United States.

Mr. Thompson may want to address this further.

Mr. THOMPSON. Senator, we monitor and meet, I guess, on an annual basis with the other countries with respect to the transportation activities and what their cask designs are. We probably maintain a higher level of margin than some of the other countries which have gone to more nonspecific types of materials for transportation, and we have not approved that type of material, which

is nodular cast iron, for the transportation activities in the U.S. for spent fuel.

We have looked at that and have concluded right now based on the information and data that is available that nodular cast iron is not licensable without additional research and development activities.

We are giving no credit right now for aging of spent fuel, what is called the burn-up, and we are also maintaining our licensing models with respect to the geometry and the physical shape of the spent fuel cask.

There are some opportunities for expanding and maybe reducing some of the current requirements, if we understand the current designs. We are looking at possibly giving credit for fuel burn-up as well as some of the geometries. But those are the key areas we are looking at right now for achieving a more cost-effective transportation system with respect to the casks that we have before us.

Senator EVANS. If an MRS were to be declared feasible and a desirable part of this entire system, would you anticipate that we would move toward putting the spent fuel rods in a canister to take them to an MRS site and keep them in the same canister for ultimate transfer to a repository, or would they be really transportation canisters, and you would remove them from the canister to store the fuel rods at an MRS and then recanister them for final delivery?

Mr. KAY. I think ideally, Senator Evans, we would look at trying to have, if we could, a dual purpose cask so that we could transport it from the reactor site to the MRS facility. Then at the time when you needed to actually extract the spent fuel rods from those canisters and go through the rod consolidation activities prior to shipping it to the repository, the container that we send it to the repository in from the MRS, should be a canister, that would be used at the repository with, overpacks over those transportation casks that will be extra protection during transportation long term isolation.

Senator EVANS. Mr. Thompson, in your statement about the allowance for aging, presumably in looking at the total costs of a whole system, I do not know what percentage of the cost transportation and storage canisters are, maybe not a very large part, I do not know, but presumably the longer the material stays in the MRS, perhaps some credit could or ought to be given then in terms of the necessary canister for final transfer?

Mr. THOMPSON. Certainly that is an easier approach to address than the one from the utilities. If it has already been in the MRS before it is packaged, I think that we would find that more likely to be acceptable.

Senator EVANS. Thank you, Mr. Chairman.

The CHAIRMAN. Senator McClure?

Senator MCCLURE. Thank you, Mr. Chairman.

You may have touched on this already, and if you did, I am sorry to repeat it, but I am not clear in my mind.

Has the deadline for submittal of proposals for the systems engineering development and management contract slipped from the April 1 deadline?

Mr. KAY. We expect to receive those proposals in by late April. We issued a modified RFP in late February, and we expect to have the proposals in by late April.

Senator MCCLURE. What is the reason for the slippage?

Mr. KAY. Following the passage of the Amendments Act, we felt we needed to take another look at the RFP. There were some modifications that needed to be made.

We feel we have had very little slippage in terms of what we could have faced in terms of going out with a revision to the RFP.

Senator MCCLURE. What is the status of the release of the $79 million that was conditionally appropriated in fiscal year 1987?

Mr. KAY. We have received a letter from the House Appropriations Committee providing that to us. We are still waiting to hear from the Senate.

Senator MCCLURE. When was that request made to the Senate?

Mr. KAY. We made the request back last summer, I believe, sir, back in the July time frame, I think.

Senator MCCLURE. Do you have any signals as to the reason for the delay in the response?

Mr. KAY. No, sir.

Senator MCCLURE. How is the Department planning to resolve the problem with respect to Nevada's unwillingness to participate in your technical workshops?

Mr. KAY. I missed the first part of your question, sir.

Senator MCCLURE. How are you planning to get Nevada to participate, or what are you going to do since they have at least exhibited a lack of willingness to participate?

Mr. KAY. Well, I think that there is nothing we can do to make.

Senator MCCLURE. You cannot make them, but are you attempting to invite them?

Mr. KAY. Yes, sir, and I think it——

Senator MCCLURE. Have you just sent one invitation and said, okay, that is it?

Mr. KAY. Oh, no, sir. We have on numerous occasions invited them. They always know of the meetings that we are holding, and they are sending observers to the meetings. The last two meetings that we had the State did have representatives there as observers.

Senator MCCLURE. But observers, not participants.

Mr. KAY. Yes, sir.

Mr. THOMPSON. Senator, they were asked at each session whether they had any comments, specifically in order to identify any concerns that they had, and they had none. They elected not to identify any issues.

Their statement to me was that this was more of an NRC-DOE meeting such that there was clarification of NRC's comments, but they did elect not to explore any questions that they may have had at that meeting.

Senator MCCLURE. They have submitted a plan to you, a request for $23 million in grant aid.

Have they identified to you what they intend to do with that $23 million?

Mr. KAY. I am sure they have, sir. I only had just the most general—in fact, it was handed to me here during the hearing today of the general outline of what their funding requests are for.

Senator McCLURE. Could you provide that for the record, their funding request?

Mr. KAY. Yes, sir.

The attached grant application from the Nevada Nuclear Waste Project Office (NWPO) identifies the State of Nevada's nuclear waste program funding requirements. Because this grant application is so voluminous, I direct your attention to the Grant Application Narrative.

[COMMITTEE NOTE.—Material submitted has been retained in Committee files.]

Senator McCLURE. Is that funding for one year?

Mr. KAY. This is funding for one year from July of 1988 to June of 1989, and the current grant they have right now for January through June is for $4.5 million.

Senator McCLURE. I believe, unless I am persuaded otherwise, I believe that your statement I would agree with. It would be very helpful if they were to get their technical experts involved in the process at an earlier period of time and that way perhaps solve some problems rather than waiting to accumulate the evidence that they can get you with later and then claim you paid no attention to them.

I am not saying that that is what they would do, but it would seem to me that it makes sense that if they really are concerned about these problems, they would try to solve them as you are going through the workshops initially.

I understood you to say that they do have good technical experts.

Mr. KAY. I think they do, and what Nevada will have to do, as other people would, is go out and hire their own consultants to interact with us. They have some good university people in Nevada that they can use. So they have the resources, broader than what they are using right now.

Senator McCLURE. What is the status of plans for Defense Programs' contributions to the Waste Fund?

Mr. KAY. We have developed a methodology by which Defense Programs will pay into the Waste Fund, but as of this date we have received no contribution from the Defense Programs element, sir.

Senator McCLURE. Has Defense Programs replied?

Mr. KAY. Yes, sir.

Senator McCLURE. Or are they like the State of Nevada?

Mr. KAY. It is not totally up to the Office of Defense Programs, sir.

Senator McCLURE. I understand that. In general, but in specific, you have made contact, and you have not received definitive replies to the contacts you have made.

Mr. KAY. No. In terms of our dealings with the Office of Defense Programs, developed a methodology by which they will pay, the Secretary has endorsed this, and the Secretary is much in favor of the Defense Programs part of the Department paying as the utilities are.

Senator McCLURE. They have said do not worry about it, the check is in the mail.

Mr. KAY. Well, not yet. We have not seen the check yet.

Senator McCLURE. They have not even said that.

In your testimony, you give a figure of $624 million for fiscal year 1990 program needs. Yet the amount authorized for fiscal year 1990 in Public Law 100-203 is only $484 million.

How do you plan to reconcile these differences?

Mr. KAY. I am uncertain how we can reconcile it other than through hearing processes and justifying what we need to do to keep the momentum going with the Waste Management Program. And that is not just the activities of characterization at Nevada, but the other aspects of the program, sir.

Senator MCCLURE. Have you requested a change in the authorization figure?

Mr. KAY. No, sir.

Senator MCCLURE. Do you plan to make such a request?

Mr. KAY. I have no comment at this time, sir.

Senator MCCLURE. Would you perhaps try to find an answer to that question and supply it for the record?

Mr. KAY. Yes, sir.

[The information follows:]

The following table provides a comparison between the funding levels reflected in the Department of Energy's FY 1989 Congressional Budget Request for the Nuclear Waste Fund and the levels authorized for appropriation by Public Law 100-203:

	Budget Authority ($ in millions)			
	FY 88	FY 89	FY 90	Total
Public Law 100-203	567.0	545.0	484.0	1,596.0
FY 1989 Congressionl Budget Request...	360.0	448.8	623.7	1,432.5

As the above table indicates, the FY 1990 estimate is greater than that contained in Public Law 100-203. However, this difference is offset by the reduced requirements in FY 1988 and FY 1989. The funding levels reflected in the Department's FY 1989 Congressional Budget Request show a cumulative savings of $163,500,000 for the triennial period FY 1988 through FY 1990, and sustain the momentum generated by the passage of Public Law 100-203. The Department will request a change in the FY 1990 authorization figure to support the program projected in its FY 1989 Congressional Budget Request for 1990, and will transmit this request with the Department's FY 1990 Congressional Budget submission.

Senator MCCLURE. Thank you.

What future role will the Idaho National Engineering Laboratory have in your dry cask storage and dual purpose cask development activities?

Mr. KAY. We have the multiphased approach going on out there now, and I would suspect, through the continuation of that, the INEL will have an active role in the cask development work.

Senator MCCLURE. Do you have any more specific projections, or could you provide more specific projections for the record?

Mr. KAY. Yes, sir.

[The information follows:]

The Department has utilized the facilities and personnel at the Idaho National Engineering Laboratory (INEL) for direct support of several programs managed by the Office of Civilian Radioactive Waste Management (OCRWM). The major activities that INEL is participating in are: (1) the multiphase competitive development project to develop and demonstrate prototypical rod consolidation process equipment; (2) the dry rod consolidation technology development project; (3) the transportation cask development project; (4) the dry cask storage testing project; and (5) the dual purpose (transport/storage) cask demonstration project.

With respect specifically to the dry cask storage and dual purpose cask activities, the dry cask storage testing project was a key activity in the Department of Energy/Virginia Power Cooperative Demonstration Agreement. That project has successfully demonstrated the at-reactor dry cask storage of spent nuclear fuel in an Independent Spent Fuel Storage Installation (ISFSI) licensed by the Nuclear Regulatory Commission (NRC) at the Virginia Power, Surry Plant. The tests conducted at INEL, using spent fuel from the Surry Plant, provided data used to validate dry storage cask designs from three different cask vendors. In addition, valuable handling and operational procedures were also developed and confirmed. This technical information was then used by Virginia Power in preparing the ISFSI license application and by the NRC in their review

and subsequent approval of the license. Similar use of the test data and operational demonstration provided assistance in the design, license application and NRC review and approval of the DOE/Carolina Power and Light Cooperative Demonstration Agreement for an at-reactor horizontal concrete module ISFSI.

The dry cask storage testing project at INEL is complete and the dry storage cooperative demonstration programs are scheduled to be completed in FY 1989. However, the dry storage casks tested at INEL will remain there for continued monitoring of their performances for long-term storage of spent fuel.

The dual purpose cask demonstration project consists of the design, fabrication, NRC certification, transport of spent fuel from West Valley, New York, to INEL and long-term storage and monitoring of storage performance. Two rail transport/storage casks have been designed and fabricated. One is designed for pressurized water reactor spent fuel and one for boiling water reactor spent fuel. Applications have been submitted to the NRC for certificates of compliance for both of the casks. It is anticipated that the certificates of compliance will be issued by the NRC in the near future and that the demonstration can begin in early FY 1989.

Senator MCCLURE. Please.

I recently sent a letter to the Department. Let me parenthetically state, so recently I certainly do not anticipate that you would have answered by this time, butI did express my dissatisfaction in the manner in which the lead in canister study has been conducted to date.

What is the Department planning to do to address the concerns I raised in that letter?

Mr. KAY. Sir, if you do not mind, I will have to answer the question for the record.

[The information follows:]

The Department of Energy (DOE) has received Senator McClure's letter and is preparing its response.

As the Senator's letter notes, DOE is evaluating the use of lead as a component of the waste package in the U.S. design. A draft report has been prepared by Brookhaven National Laboratory, which provided a review of the known properties of lead and current and planned uses of lead, both abroad and in the United States. The report compared the functions of lead in foreign waste package designs to U.S. designs, primarily contrasting differences in expected waste package environments. Also, when possible, bounding estimates of performance were made utilizing potential waste package designs.

Currently, DOE is revising the report based on comments received both internal and external to the Department, including comments from the North American Lead Industry, the Bureau of Mines, and the Nevada Nuclear Waste Storage Investigations project.

Senator MCCLURE. If you would, please.

You made some general comments earlier, but let me ask a more specific question.

How do you intend to resolve the concerns raised by NRC with respect to QA programs, alternative models for hydrologic and geologic systems, and the exploratory shafts' effects on repository performance?

Mr. KAY. Well, as I indicated, and Mr. Thompson indicated, we have been discussing all three of these areas of concern. I fully believe that we can resolve each of them prior to publishing the Site Characterization Plan in final.

I concur with Mr. Thompson in his assessment that the quality assurance plans and program of the Department's activities must be in place before we get our site characterization activities fully under way in terms of the exploratory shaft.

We are a very process driven program. I think quality assurance is right at the apex of being able to have the employees know what the quality assurance program is about and being able to implement it fully as they carry out the site characterization activities.

Senator MCCLURE. Mr. Thompson, do you feel that the Department of Energy is being responsive in addressing the concerns you identified on pages 5 to 7 of your testimony?

Mr. THOMPSON. Well, we certainly are in dialogue with them. I think they are being very responsive in making sure they understand the issues and understanding the concerns we have.

Obviously they have not responded specifically to those because those responses will be developed as we go through the workshop activities, and in the revision to the site characterization plan.

So I cannot say that I am pleased at their response. I am certainly pleased with the communication and the dialogue that we are having in order to establish a framework for them to respond.

Senator MCCLURE. You have no specific concerns now?

Mr. THOMPSON. I have no specific concerns that I do not believe that the Department would be able to address through the dialogue and the workshops. Obviously the quality assurance program is the key one, and it is more of an implementation issue as opposed to being able to put something on paper.

Obviously we can work to make sure a quality assurance program is written. Getting it implemented is a key element of making sure you get the product out, and we have agreed that we will audit and participate in the DOE audits of their contractors to provide additional assurance that those types of programs are properly implemented.

Senator MCCLURE. Could you elaborate on the makeup and responsibilities of your federally funded research and development center as described on page 9 of your testimony?

Mr. THOMPSON. Well, the Center, which is run by the Southwest Research Institute in San Antonio, Texas, is a multidisciplined organization that functions in both the transportation area, with respect to being able to evaluate the cask designs and the environmental impacts that would be associated with those, and in technical areas associated with the siting of the repository, such as geology and hydrology. It will be providing a number of skills that we will need. It also has some systems integration functions.

We talked earlier about making sure we have scheduled efforts on all the aspects that need to be addressed prior to the licensing of the repository to make sure all the regulatory framework is in place, to ensure that we have a reasonable expectation to complete our licensing review within the three years. They have or will acquire all those skills and abilities that we would need to be able to accomplish that.

They may have some MRS capabilities, but that is not too much. Most of the MRS-type reviews that we have will probably be done in house. Those are skills that we would normally have associated with the power plants. So we probably would not use those to the same extent that we would in the other two areas.

Senator MCCLURE. You mentioned you are carefully monitoring what is happening in other countries with respect to transportation, that I believe you said you have at least annual reviews in connection with their programs, am I correct?

Mr. THOMPSON. That is correct.

I do not know whether I would characterize it as an annual—we participate in annual meetings that review the activities in those other countries.

Senator MCCLURE. All right. Now, obviously they do quite a lot more than we have done.

Mr. THOMPSON. Well, we do quite a bit of shipment of spent fuel. We review or own casks. We have those activities reviewed. We are reviewing these both for the civilian as well as the Navy activities in the United States.

Senator MCCLURE. I guess what I am really wondering is are we about to reinvent the wheel several times over? Are we starting anew, or are we simply building upon what we already know?

Mr. THOMPSON. Certainly we are building on what we already know.

We have had an extensive program, with rules and regulations with respect to the design requirements for the Class B, which is the significant shipments of high-level radioactivity for which we have been issuing licenses in the United States for some time.

Senator MCCLURE. But, you know, a lot of people kind of look at the fact that you are studying cask design, you are looking at what we are going to do with respect to future repositories, and I think the inference there is that we do not do it now.

Mr. THOMPSON. Oh, I see. Well, that is certainly not correct. We have a very long history of doing these reviews, on casks and cask performance, and there have not been many involved in transportation accidents, but in every case there is no member of the public that has ever been injured by any radiological consequences of any of those accidents.

Senator MCCLURE. You know, I almost want you to repeat that statement because I do not see that in the newspapers. Every time there is a movement, they talk about things that might happen. Very few people are looking at the record that we already have.

Mr. THOMPSON. Our record is that we have probably over 100 shipments each year of spent fuel coming into and out of the country, between reactors, and that has been a continued pattern for years. We have completed what we would call a transportation modal study—I would be glad to provide it for the record—which

even goes and analyzes the capabilities of our current rules, regulations and casks with respect to even the most severe accidents, and even in those accidents—the public had been well protected by those cask designs.

Senator McCLURE. Would you provide that for our record, please?

Mr. THOMPSON. I would be glad to provide it for the record.

The Nuclear Regulatory Commission submitted a copy of the executive version of NRC's Modal Study, NUREG/BR-0111, "Transporting Spent Fuel—Protection Provided Against Severe Highway and Railroad Accidents", which has been retained in Committee files.

Senator MURKOWSKI. Did you say from other countries?

Mr. THOMPSON. No, in our own country. This is the severe accidents that we have had, you know, Caldecott Tunnel fire in California——

Senator MURKOWSKI. This is transportation accidents?

Mr. THOMPSON. In the United States which we analyzed. Because in the accidents we experienced there was no damage whatsoever to the cask, what we did was to anticipate and ask what would have been the likely occurrence if a cask that we had licensed had been involved in the most severe accidents, you know, the train accidents where they had multiple car failures and burning for hours. So we evaluated all of those to determine whether our rules and our regulations are sufficient to provide adequate assurance that the public would not be in jeopardy from the material being shipped, not that the accident itself would not maybe kill people. Obviously some people might have been killed, but there has been no release of the radioactive material that is being transported in those casks.

Senator McCLURE. The same thing is true with respect to shipments overseas, within foreign countries?

Mr. THOMPSON. I will supply that for the record. I do not know personally the answer to that one.

[The information follows:]

NRC participation in international nuclear energy organizations and our interactions with regulatory authorities in other countries with nuclear programs provide us with access to information on transportation accidents involving HLW. International symposiums on the packaging and transportation of radioactive material are held every three years and include sessions on transportation experience and accidents. The International Atomic Energy Agency is also considering the establishment of a reporting system with input from member states on accidents and incidents in the transportation of radioactive material. The United States will participate in the development of this reporting system and will have access to this information. In addition, the NRC plans to pursue obtaining information on civilian transportation accidents through existing nucler safety information exchange agreements with 22 countries.

Senator McCLURE. Would you, please?

Mr. THOMPSON. Yes, sir.

Senator McCLURE. Because both France and Sweden have very active programs, and they are very open societies in which those can be reviewed. Obviously the Soviet Union has active programs, too, but it is scarcely one we could review in very much detail.

Mr. THOMPSON. We are trying to negotiate agreements with the Russians now. I think they are coming in. This may be an excellent area to attempt to include in that agreement with them.

Senator McCLURE. Well, it would be helpful, I should think, because the more experience that we can acquire, whether somebody else's or our own, the better based we will be able to be with respect to the judgments we make.

I have said this so often, I hate to mention it again, but there was a traffic accident involving the shipment of radioactive wastes in the State of Idaho within the last year, a truck went off the road and into the Snake River, and of course, the speculation immediately was that all the fish from there to the Pacific Ocean would glow in the dark, and they would be easy to find.

The fact of the matter is the only contamination that occurred was from the crankcase oil from the motor of the truck.

And I hope people will sometime understand that we do have an active program. Many members of this committee understand that. We have looked at a tremendous amount of data with respect to research and experimentation that has occurred with respect to casks and cask failure, and that goes back over many, many years. It is not as though we are just now getting started into a program of looking at cask design. What your cask design studies are doing is looking at all the past data, the experience that we have acquired from our own activities and those from other sources where we can find that information, utilizing all the information at our hand to determine what changes, if any, need to be made in light of a new repository program and associated transportation.

Did I state that correctly?

Mr. THOMPSON. You stated it very clearly, sir, and that is a true statement. In fact, the Office of Science and Technology Assessment recently looked at the transportation of hazardous material, and the one area which they felt was providing a higher degree of margin of protection to the public than at most any other hazardous material was the transportation of spent fuel.

Senator McCLURE. And that, do you have access to all of the information with respect to military waste transport as well?

Mr. THOMPSON. I do not know how to answer that question precisely. Obviously with respect to the shipments that we license, we have all the information available to that. There may be some transportation activities with the actual weapons that I may not have all the data to, but for the casks and the activities that would be related to our activities, we have that information.

Senator McCLURE. Well, at the risk of being redundant, I want to repeat for the record again an occurrence at Idaho National Engineering Laboratory of now some years ago. I have forgotten exactly what the date was. A shipment of radioactive wastes from Rocky Flats plant in Colorado to the site at Idaho with an NBC film crew there to film the hazards of transportation and radioactive exposure to workers. As the truck rolled through the gate, the radiation alarms went out, and the crew sprang into action because they were getting a live example of what they were there to prove. The safety teams as well as the film crew went all around that truck trying to find out where the radioactive emission was coming from. They finally found it in the cab of the truck behind the seat in the driver's suitcase because he had an alarm clock with a fluorescent face, phosphorescent face.

Now, naturally that film ended up on the cutting room floor and has never seen the light of day. Somewhere, sometime truth needs to come out in a balanced exposure of what the facts are. That is the reason I take the time to repeat that this morning.

Senator Murkowski?

Senator MURKOWSKI. I will not make a reference to a voice crying in the dark because that would be inappropriate. But that is certainly humorous and quite understandable in the sense of finding the cuttings on the floor.

Just a couple of questions.

Mr. Kay, in your summary statement you mentioned the reference with regard to the retrievable storage facility, the implication there being that indeed the design would be relatively easy access for pulling the high-level nuclear waste and perhaps doing something else with it at some future time such as reprocessing.

Explain to me when you refer to retrievable storage as opposed to semipermanent storage, in other words, once you get the particular area filled up to capacity, is it designed to remain in perpetuity, or is it designed to have a retrievable capability if we would want to go back and reprocess that at a later date once we have a change in our law?

And the second part of the question would be, if it is retrievable, how much more does that cost? Does it increase the overall cost by a percentage as opposed to having it put in a storage that implies perpetuity?

Mr. KAY. Senator Murkowski, I am unclear as to the reference in the testimony, but let me go back and pick up some of the points.

Senator MURKOWSKI. Well, here on page 24, the Amendments Act maintains a national commitment to establishing a safe, environmentally acceptable nuclear waste management system for spent nuclear fuel and high-level radioactive waste, and provides a focus for repository activities, authorization for a monitored retrievable storage facility.

Mr. KAY. A Monitored Retrievable Storage facility is a facility that we see as a flexible coupling between the over 100 reactor sites that we currently have in this nation and the repository. The Monitored Retrievable Storage facility does not refer to something that would take place specifically at the repository site.

Senator MURKOWSKI. Well, I am confused already.

Are you implying that the monitored retrievable storage is not the final resting place?

Mr. KAY. That is correct, sir.

Senator MURKOWSKI. OK.

Mr. KAY. The original Monitored Retrievable——

Senator MURKOWSKI. Why is it not?

Mr. KAY. The Monitored Retrievable Storage facility concept, you have to go back a number of years. At one point, people thought a Monitored Retrievable Storage facility is a place where one would place spent fuel in the anticipation that a repository would come on line some years down the road.

We have proposed a Monitored Retrievable Storage facility not in terms of that type of facility but a facility that can best be described as a receiving, packaging and handling facility wherein the spent fuel is brought from over 80 percent of the 100 reactors from

the East Coast to a central location where we can consolidate it and prepare it for shipment to the repository, the final place where the spent fuel will go.

The Congress has rightfully, I believe, placed some restrictions on how we would operate such a facility in terms of it can——

Senator MURKOWSKI. This is just the process of collecting it and then shipping it to the permanent?

Mr. KAY. Yes, sir.

Senator MURKOWSKI. All right. Is the permanent repository designed to basically store the waste in perpetuity, or does it have an optional capability that it could be used and reopened to reprocess?

Mr. KAY. The repository is designed to store the fuel in perpetuity. However, we are required from the time that the last spent fuel is placed in the repository to monitor the repository prior to closing the facility, what we call the postclosure phase of the repository operation, for a period of 50 years to see if there are any health concerns or environmental concerns that we have to deal with.

Should the nation at some point decide to develop a reprocessing capability, I am sure that would be a consideration should this spent fuel be extracted.

Now, there is an awful lot of spent fuel that would be in a repository, and we would have to have a very big mixed oxide or breeder reactor program to fully be able to use that much spent fuel for those other programs.

Senator MURKOWSKI. So it is fair to say that the question of having an option has been looked into, even though we do not legally have that option now.

Mr. KAY. That is correct.

Senator MURKOWSKI. And the practicalities are that it would seem more feasible just to put it in a final repository without the option of opening it for retrieval and reprocessing.

Mr. KAY. We currently have at hand spent fuel in this nation which we need to dispose of. There are adequate uranium supplies in this nation now to be able to supply the reactors of the future for operation. But should the nation decide to reprocess, I am sure that would be an option that one may want to look at, should some of this spent fuel be——

Senator MURKOWSKI. I guess that is my basic question. Is this option viable in the sense that the design that you are initiating into your final repositories?

Mr. KAY. Yes, sir. As I stated, we will be operating the repository based on the reactors on line today, the last spent fuel would come into the repository about the year 2039, and then we would leave it open for 50 years.

Senator MURKOWSKI. Well, this Senator feels very strongly as a consequence of observing the French technology that we have got our head in the sand in the manner in which we are disposing of our high-level nuclear wastes, and that technology is already in France, and the Japanese will have it in the not too distant future, and we will still be wondering what to do with ours, and we will probably be continuing to argue the merits as opposed to maintaining the other alternative, which is to reprocess.

Mr. KAY. Yes, sir.

Senator MURKOWSKI. Now, that leads me into my second question, and I will try and be brief because you gentlemen have been very good about spending a good portion of your morning.

With the agreement that was recently reached with the Japanese where they have basically a 30 year option, I guess it is you might say an option, at their pleasure, to take reprocessed plutonium from the accumulation of their high-level nuclear wastes which would be shipped to France by surface transportation, I gather, and then reprocessed and flown from France to Japan, and in the agreement, that flight would now cover an all-water route over the North Pole, and until the aircraft were available—namely, I think they are talking about the Boeing 747-400B freighter—they would use surface transportation.

My questions involve two particular points, the application of oversight to see that the casks meet a failsafe test, and also, the appropriateness of whether or not they would have to meet the NEPA requirements.

Now, let's take the cask that would be utilized to move by surface transportation.

Recognizing that this is really a commercial venture between the French and the Japanese, but the enriched uranium was initially ours at one time, we had control under the nonproliferation agreement, does the surface transportation mandate that the cask meet the approval of both our Nuclear Regulatory and the Department of Energy?

Mr. THOMPSON. Senator, the cask that would probably be used would not be——

Senator MURKOWSKI. There has been one shipment already made by surface, and let's talk about that cask.

Mr. THOMPSON. That is correct.

Well, I will provide the specifics on that cask for the record because I was not involved in the program at that time.

My anticipation and my expectation would have been that that cask would have been licensed by the country that the shipment came out of and by the country receiving it, and there is typically a reciprocity.

[The information follows:]

The previous shipment was completed by sea in transportation casks authorized by France and Japan. Two designs were used as follows:

Design	FS-47	No. 1356 Container
Structure	Multiple layered structure composed of an inner leak-tight container for nuclear materials and an outer container to protect the inner container.	Multiple layered structure composed of an inner leak-tight container for nuclear material and an outer container to protect the inner container.
Configuration	Cylindrical	Square
Dimensions	Diameter: about 0.7m Length: about 2.1m	Length: about 4.2m Width: about 1.0m Height: about 1.0m
Weight of packaging	About 1.4 tons	About 3 tons
Quantity of PuO_2	Max. 13 Kg	Max. 84 Kg

Senator MURKOWSKI. So we would not have had any oversight in the cask.

Mr. THOMPSON. Not unless it came into the United States, and I do not believe that shipment came into the United States.

Senator MURKOWSKI. If it is within our 200 mile limit, does that give you jurisdiction?

Mr. THOMPSON. I do not believe so. Actually, for my group to do the review to require a license, I think it has to come into the United States.

Senator MURKOWSKI. Would you provide that for the record, the specifics of what constitutes coming into the United States? Does it have to come into our harbor, or be how close to our shore?

Mr. THOMPSON. I will provide that.

[The information follows:]

The NRC has the responsibility of licensing imports and exports of source, special nuclear, or byproduct material, but vessels which merely pass through the territorial waters of the United States have the right of "innocent passage" through U.S. waters and are not subject to the licensing authority of the NRC.

Senator MURKOWSKI. In that particular instance, the Nuclear Regulatory Commission did not have anything to do with the casks?

Mr. THOMPSON. I do not think we were required to. I do not know the specifics of that case, but I will tell you, we may have reviewed those casks for some other reasons but not for shipments, that would have gone through the Panama Canal Zone from that aspect.

Senator MURKOWSKI. OK. Our control over the Panama Canal Zone does not imply that there is an oversight by NRC?

Mr. THOMPSON. No, sir.

Senator MURKOWSKI. What are you planning to do about the casks that will have to be designed failsafe to carry the plutonium from France to Japan? It is my understanding again that that agreement has concluded, that it will be a route over the North Pole, all-water route and down the International Date Line and into Japan without a stop in North America for refueling.

Mr. THOMPSON. If they do not fly over U.S. air space, which I believe is the amendment that you had in there.

Senator MURKOWSKI. That is correct.

Mr. THOMPSON. Then we do not have any licensing responsibility.

Senator MURKOWSKI. Now, in that agreement there is a provision that in case of emergency they will be allowed to land at a military airfield, which would, of course, mandate flying over a portion of U.S. land or air space.

Does that bring NRC in?

Mr. THOMPSON. I would have to look at that in specifics. I know that we are discussing now with the Japanese their plans and whether or not they intend to proceed with the licensing and development activities. We have funds in our fiscal year 1989 program to develop those criteria at the level that would be sufficient to satisfy your amendment.

Senator MURKOWSKI. Well, I am a little confused here.

Do you then in this case, since the intent is not to fly over U.S. waters or land mass, just relegate the design to the Japanese and

the French because it is a commercial venture between the two and you do not set a criteria that has to be met?

Mr. THOMPSON. We have to have some statutory authority. Relegate I do not believe is what we would find to be an appropriate aspect, because if in fact they had to have a U.S. licensing authorization, they had to be licensed by NRC, we would do it. We would do it with the criteria that satisfied your amendment. If there were techniques, if they had plans that said we are not going to fly over the U.S. territorial air space, I have no authority to demand that they spend the resources to get a"NRC license. "

Senator MURKOWSKI. I am obviously curious because this is a two-sided coin. The intention is clearly not to do so, but in an emergency, there is no other alternative, that airplane is going to have to come down and land, and in the agreement it is already identified that it would be a military base.

So do you not have to address the eventuality?

Mr. THOMPSON. I could address it at that time and say you are in violation of the law.

Senator MURKOWSKI. No, in the agreement it provides permission to land at military bases, so would that not give you an oversight to assure that the cask met your specification because that would truly be a possible alternative, and in your business, I assume you have to address possible alternatives.

Mr. THOMPSON. I will have to look at that because I have not looked at that aspect of it.

Obviously we are still right now proceeding along the lines that we would do a technical review of that cask design, and——

Senator MURKOWSKI. You would what?

Mr. THOMPSON. We would do a technical review. We would evaluate the licensability of that cask to the criteria established.

Senator MURKOWSKI. The licensability, so that implies that it has to meet some criteria.

Mr. THOMPSON. That is correct.

We will do a licensing review.

Senator MURKOWSKI. You would do the licensing review?

Mr. THOMPSON. If it were going to be in the United States.

Senator MURKOWSKI. Well, it might be if the airplane gets in trouble.

Mr. THOMPSON. If the scenario you put forward——

Senator MURKOWSKI. My point is there is a realistic actuarial odds that says that over the next 20 years of flying, there may be an emergency which would mandate—my question is whether that is part of your charge, to address, that you have an oversight because in the agreement it specifically allows that aircraft to come in to a U.S. airfield. That is what I need clarification on, and if that oversight is indeed your responsibility, then I would assume you would have to assess the cask design to meet your whatever requirements you may have, even though we do not fly plutonium.

Mr. THOMPSON. I will have to provide for the record a response to that specific scenario, whether or not the fact that they have that opportunity and the right to land will in fact trigger them to provide an application for licensing of that package to us.

Senator MURKOWSKI. Okay, I think you understand.

Mr. THOMPSON. I understand the question. I do not know specifically the answer.

[The information follows:]

The NRC does not have licensing responsibility for shipments between foreign countries which do not involve planned entry into United States airspace. Unplanned entry into United States airspace in the event of an emergency would not alter NRC licensing responsibilities. However, the NRC would advise appropriate authorities to take steps so that adequate physical protection would be provided for formula quantities of strategic special nuclear material in the event of an unplanned landing in the United States.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

May 26, 1988

The Honorable Frank H. Murkowski
United States Senate
Washington, D.C. 20510

Dear Senator Murkowski:

On March 28, 1988, the Senate Energy and Natural Resources Committee held a hearing on the Department of Energy's Fiscal Year 1989 budget request for the Office of Civilian Radioactive Waste Management. Mr. Hugh Thompson, Director of the Nuclear Regulatory Commission's Office of Nuclear Material Safety and Safeguards, also provided testimony.

During the hearing you asked Mr. Thompson whether NRC has responsibility for conducting a licensing review of the shipping cask to be used for the transport of plutonium under the "Japan Agreement," since the Agreement provides for use of a United States airfield in the event of an emergency. The Commission has considered your question and has determined that the NRC does not have licensing responsibility for shipments between foreign countries which do not involve planned entry into United States airspace. Unplanned entry into United States airspace in the event of an emergency would not alter NRC licensing responsibilities. However, the NRC would advise appropriate authorities to take steps so that adequate physical protection would be provided for formula quantities of strategic special nuclear material in the event of an unplanned landing in the United States.

This information is also being provided as an insert to the record of the hearing.

Also enclosed are responses to two addition questions that concern NRC's licensing responsibilities with regard to the shipments of radioactive materials.

If you need additional information, please contact me.

Sincerely,

John C. Bradburne, Director
Congressional Affairs
Office of Governmental and
Public Affairs

Enclosures:
As stated

QUESTION. What are NRC's licensing responsibilities with regard to shipments of plutonium transported by air [presumably from the United Kingdom or France] to Okinawa for subsequent shipment to Japan by boat?

ANSWER.

The geographical definition of "United States" in subsection 11.bb. of the Atomic Energy Act of 1954, as amended, (42 U.S.C. 2014(bb)) does not include Okinawa. Under these circumstances, the NRC has no licensing responsibilities with regard to either a plane or ship carrying the plutonium. The NRC would have "licensing responsibility" (i.e., approval authority over the design of the shipping cask used for the air transport of plutonium) in the very limited situation where the airplane transporting the plutonium from France or the U.K. to Okinawa makes a planned overflight over the United States. The NRC's authority in this situation arises from section 5062 of Public Law 100-203, the Omnibus Budget Reconciliation Act of 1987.

QUESTION. What are NRC's licensing responsibilities with regard to shipments between two foreign countries of uranium [presumably in the form of spent nuclear fuel] to be reprocessed where the transportation involves water transport through the Panama Canal?

ANSWER.

The Department of Transportation (DOT), not the NRC, has licensing responsibility over transportation within the United States by common or contract carriers transporting any form of source, special nuclear, or byproduct material. The NRC does have regulations providing for a general license for carriers of transient shipments of formula quantities of strategic special nuclear material but such licenses are limited to requiring physical or safeguard protection for such shipments in accordance with NRC regulations. Neither DOT nor NRC has jurisdiction over transportation on the high seas. The same is true for transportation passing through the Panama Canal because under the Panama Canal Defense Act of 1979 (P.L. 96-70, September 27, 1979) and the Panama Canal Treaty of 1977 (September 7, 1977), the U.S. has discontinued its geographic jurisdiction over the Panama Canal Zone. The Act and the Treaty supersede all previous legislation and accordingly, the reference to the Canal Zone as being part of the U.S. (in a geographic sense) in subsection 11bb. of the Atomic Energy Act of 1954, as amended, (42 U.S.C. 2014(bb)) is not valid.

Senator MURKOWSKI. Are you aware that on the Budget Resolution bill which is the law of the land, there is a requirement that the plutonium meet a crash test, and there is a reference that it either has to actually survive a drone crash or a free fall from cruising altitude of 30,000 to 40,000.

Mr. THOMPSON. That is correct, yes, sir.

Senator MURKOWSKI. And so will you be involved in that oversight?

Mr. THOMPSON. That is my responsibility for establishing those criteria, if the NRC establishes those criteria.

Senator MURKOWSKI. If the NRC does what?

Mr. THOMPSON. If the NRC establishes those criteria, because you remember, that is for a foreign nation to establish, if a foreign nation were to intend to fly over the U.S. air space, and part of that provision required for the foreign governments to fund that activity, and we intend to develop those criteria based on the application and intent of a foreign nation to actually fly over the——

Senator MURKOWSKI. Are you also aware that there is a NEPA requirement as well, that is tied to the budget reconciliation?

Mr. THOMPSON. That does not seem to trigger anything in my mind. Obviously I am aware of our NEPA responsibilities.

Senator MURKOWSKI. There is a NEPA requirement in there.

Well, in view of that, I think it is fairly important, since the agreement has been moved off the floor of the Senate in an affirmative manner, and the agreement has been altered to exclude intentional over U.S. water and land flights, that we address this area of as a consequence of an emergency, are you going to be involved in the actual testing or oversight to see that it meets our criteria, and whether NEPA is applicable or not.

Mr. THOMPSON. That is correct. I will be responsible for that for NRC.

Senator MURKOWSKI. Now, is there any international, as a consequence of the laws in Japan which currently do not allow plutonium to come into that country in a raw form—I assume that is going to have to be changed over there, is that the layman's?

Mr. THOMPSON. My understanding is they will fly it and land on some other island, and then have a transport from another island to Japan.

Senator MURKOWSKI. Another what island?

Mr. THOMPSON. I do not know specifically what the transportation plans are.

Senator MURKOWSKI. We do not know what their transportation plans are?

Mr. THOMPSON. I personally think that—I do not know if there is some near island, Okinawa or some other island that is similar to that, they will probably fly to and land there and then transport by ship, given the current——

Senator MURKOWSKI. Who would have security on Okinawa under its current structure?

Mr. THOMPSON. I do not know whether that is a sovereign nation.

Senator MURKOWSKI. I think it is the current plans of the Japanese to land on an unnamed airfield in Japan as opposed to—but in any event, are you familiar with what the Japanese have to do to comply with——

Mr. THOMPSON. Not with their laws, no, sir.

Senator MURKOWSKI. And the rationale that we have an oversight responsibility, how does it follow now? If we gave them or sold them the enriched uranium and they put it in their reactors, and then they took that same rods, I guess, and shipped it over to France, which I assume is going to be by surface transportation and not by airliner, and then reprocessed it, enriched it, and then put it back in their reactors, that would mandate under the Nuclear Nonproliferation that we maintain a continuity of identification.

Mr. THOMPSON. That is correct.

Senator MURKOWSKI. But if they are buying it from South Africa or Australia or Canada, how do we identify whose nuclear waste they are processing?

Does it not all look the same when it is sitting there in a rod?

Mr. THOMPSON. They have an accountability of material by, I guess you might call it a bookkeeping arrangement, and the bookkeeping arrangement requires them to in essence identify how much has been responsible for or produced in U.S. supplied material.

If it is a U.S. supplied reactor, and many of those are, then any material irradiated, any spent fuel then would be tracked and accountable to the U.S. for that material.

Senator MURKOWSKI. If it goes through our reactor?

Mr. THOMPSON. Yes.

Senator MURKOWSKI. So it does not make any difference where the yellow cake comes from.

Mr. THOMPSON. That is right.

Senator MURKOWSKI. I want to thank you, Mr. Thompson, and you, Mr. Kay, for staying with us, and I would like to thank the professional staff as well. I am told that additional questions will be submitted for the record. The hearing record will remain open one week, and how long do you think it would be before you could get back to me on the question of what the NRC's oversight is as a consequence of the agreement that we have now with Japan?

Mr. THOMPSON. Let me ask my attorney who will have to start the preparation, and we have a fairly lengthy review process even after that.

Let me consult one moment.

[Pause]

Mr. THOMPSON. With great fear and trepidation I will say three weeks because I have a commission that I am sure will be very interested in this particular subject matter. We can probably produce a response to the commission addressing this issue in a couple of weeks, but it may take some longer time.

Senator MURKOWSKI. I want to make sure that we get it in the record of this hearing because it is, I think, quite significant.

While it may be a small point, I think it reflects legitimately on just the extent of what your oversight is in the what-ifs.

Mr. THOMPSON. Yes, sir.

Senator MURKOWSKI. I want to thank you gentlemen, and the hearing is adjourned.

[Whereupon, at 12:10 p.m., the hearing adjourned.]

APPENDIX

RESPONSES TO ADDITIONAL COMMITTEE QUESTIONS

Department of Energy
Washington, DC 20585

May 17, 1988

Honorable J. Bennett Johnston
Chairman
Committee on Energy and Natural
Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

On March 28, 1988, Charles E. Kay, Acting Director, Office of Civilian Radioactive Waste Management appeared before your committee to discuss the Department's Fiscal Year 1989 budget authorization for Civilian Radioactive Waste Management programs.

Following that hearing, you submitted written questions, including questions on behalf of Senator Hecht for our response to supplement the record. Enclosed are the answers to those questions. A copy of the responses to Senator Hecht's questions have also been sent to him.

If you have any questions, please have your staff call Michael Gilmore on 586-4277. He will be happy to assist.

Sincerely,

Rebecca A. Thompson

for Robert G. Rabben
Assistant General Counsel
for Legislation

Enclosures

POST-HEARING QUESTIONS AND ANSWERS
RELATING TO THE HEARING OF MARCH 28, 1988

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

WITNESS: CHARLES E. KAY, DIRECTOR
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

QUESTIONS FROM CHAIRMAN JOHNSTON

Nevada Site

Question 1: How has work progressed at the Nevada site since passage of the 1987 amendments?

-- What work is underway now and at what pace will the scope of work be expanded?

-- When do you expect to begin drilling of the exploratory shaft?

Answer: Currently, DOE is in the process of interacting with the State of Nevada and the Nuclear Regulatory Commission (NRC) on the Consultation Draft of the Site Characterization Plan which was published in January 1988. A major effort will be undertaken to complete the Site Characterization Plan once the consultation process is complete, and to publish both detailed Study Plans, which will be sent to the NRC for comment, and quality assurance documents, which are necessary prior to the initiation of new field and laboratory work. It is expected that the Site Characterization Plan will be published in the latter part of calendar year 1988.

Field and laboratory work that is currently underway includes ongoing monitoring activities (such as seismic monitoring and water table monitoring), data collection activities in the field, and laboratory analyses

Answer 1 (cont'd)

that have appropriate quality assurance procedures. Additionally, prototype tests are being completed to develop testing methods and testing procedures. The ongoing work was described in a letter to the State of Nevada dated March 13, 1987, a copy of which is attached.

Based on the current schedule, the start of exploratory shaft construction will be in June 1989. The schedule reflects the following:

- o In process, the ESF Title I design is at the 50 percent stage.
- o Early CY 89, site preparation construction will start.

No new technical work will be initiated until DOE is satisfied that a "fully qualified" QA program is in place.

Department of Energy
Washington, DC 20585

MAR 13 1987

Mr. Robert R. Loux, Executive Director
Agency for Nuclear Projects
Nuclear Waste Project Office
Capitol Complex
Carson City, Nevada 89710

Dear Mr. Loux:

Enclosed is a copy of the report entitled Nevada Nuclear Waste Storage Investigations Project Summary of Ongoing and Planned Site Characterization Activities for the Candidate Site at Yucca Mountain, Nevada. This report was prepared by the Nevada Nuclear Waste Storage Investigation Project (NNWSI) in response to agreements reached between the Department of Energy (DOE) and the Nuclear Regulatory Commission (NRC) to provide letter reports describing ongoing site characterization studies at the two Federal sites. No new site characterization studies have been initiated at the NNWSI Project site since its identification as a candidate for characterization in May 1986. Stop work orders were issued to ensure that the appropriate quality assurance program has been implemented before site characterization data collection begins. When the stop work orders are released and if any new site characterization studies are initiated at the NNWSI Project site before the Site Characterization Plan (SCP) is issued, study plans will be provided for review by the State and NRC in advance.

It is DOE's intention that exploratory shaft study plans will be released along with the NNWSI Project SCP. To the extent possible, study plans for other activities scheduled for initiation during the first year after SCP issuance will be released with the SCP as well.

Drafts of NNWSI Project SCP Chapters 1-7 are being forwarded to your office for your information and assistance in becoming familiar with the document before its anticipated release in midsummer. DOE representatives would be pleased to meet with you at your request to discuss these chapters.

If you have additional questions regarding the subject report, NNWSI Project's study plans, or the draft copies of Chapters 1-7, or if you would like to arrange a meeting to discuss Chapters 1-7, please contact Dr. Donald Vieth, Project Manager, at (702) 295-3662.

Sincerely,

Tom Isaacs

for Stephen H. Kale
Associate Director for
Geologic Repositories
Office of Civilian Radioactive
Waste Management

Enclosure

bcc w/o attachments:

S. Kale
T. Isaacs
R. Stein
D. Alexander
C. Hanlon
S. Grodin
M. Frei
A. Jelacic
J. Knight
C. Newton
J. Parker
J. Bresee
R. Blaney
V. Cassella
J. Daly
J. Morris
B. Gale
R. Mussler
S. Echols
J. Mecca
G. Appel
T. Baillieul
R. Jackson
J. Nelson
A. Van Luik

bcc w/Summary Report only

C. Borgstrom
C. Bradley
D. Vieth
M. Blanchard
M. Voegele
J. Anttonen
J. Neff

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS PROJECT
SUMMARY OF ONGOING AND PLANNED SITE CHARACTERIZATION ACTIVITIES FOR THE CANDIDATE SITE AT YUCCA MOUNTAIN, NEVADA
May 1986 - April 1987

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MARCH 1, 1987

NNWSI PROJECT
SUMMARY OF ONGOING AND PLANNED SITE CHARACTERIZATION ACTIVITIES FOR THE CANDIDATE SITE AT YUCCA MOUNTAIN, NEVADA
May 1986 - April 1987

1.0 Preface

The Nuclear Waste Project Act (NWPA) of 1982 requires that the Department of Energy (DOE) prepare and issue a Site Characterization Plan (SCP) to the Nuclear Regulatory Commission (NRC) and to affected States and Indian Tribes before sinking exploratory shafts (ES) at any candidate sites. While site characterization activities related to the exploratory shaft facility (ESF) will not be initiated until after the issuance of the SCP, some surface - based activities are ongoing or may be initiated before issuance of the SCP.

During the May 7-8, 1986, NRC DOE meeting on the level of detail for site characterization plans and study plans, the DOE agreed to prepare a letter report describing these ongoing and planned site characterization activities for the States and Indian tribes. Ongoing activities are defined as site characterization activities, as defined by NWPA, that were in progress at the time of Presidential Approval (May, 1986). Planned activities are defined as site characterization activities, as defined by NWPA, that have been started, or are planned to be started, after Presidential approval, but before the expected date of SCP issuance (April, 1987).

2.0 Introduction

According to the NWPA of 1982, site characterization refers to those research activities, whether in the field or in the laboratory, that are undertaken to establish the geologic condition and the range of parameters relevant to an evaluation of the suitability of a candidate site. Yucca Mountain became a candidate site on May 28, 1986, with the President's approval of the recommendation by the Secretary of the DOE. This recommendation was accompanied by a final Environmental Assessment pursuant to the NWPA.

Site characterization activities that take place in the field include mapping, geophysical surveys, borings, surface excavations, excavation of exploratory shafts, subsurface lateral excavations and borings, and in situ testing. Laboratory activities include measurement of thermal, mechanical, and hydrological rock properties; analysis of gas and water samples and fossil plant material; detailed mineralogic and petrologic analyses; and geochemical studies under conditions simulating the repository environment. Office activities include modeling and data reduction and analysis. Excavation of an exploratory shaft and in situ testing at the depths of waste emplacement are required by the NRC (10 CFR 60.10(b)), and were described in the DOE Mission Plan.

89-985 0 - 88 - 5

2.1 The Nevada Nuclear Waste Storage Investigations (NNWSI) Project Site Characterization Plan (SCP).

Site information gathered during the 1978 to 1984 time frame was used to prepare the EA and to evaluate the site against the DOE siting guidelines. Site investigations completed before Presidential approval (May 1986) but not reported in the EA will be described in the SCP, tentatively scheduled for issuance in April 1987.

Data Chapters 1 through 5 of the NNWSI Project SCP will establish the current understanding about the Yucca Mountain site with regard to Geology (Chapter 1), Geoengineering (Chapter 2), Hydrology (Chapter 3), Geochemistry (Chapter 4), and Meteorology and Climate (Chapter 5). Current conceptual designs for the repository and waste package are provided in Chapters 6 and 7, respectively. Results from ongoing studies and design activities available too late for incorporation into the SCP will be reported in the semiannual Progress Reports.

Chapter 8 of the SCP contains a description of plans for site characterization activities. Section 8.1 of the SCP describes the rationale for the planned site characterization program, while Section 8.2 discusses the technical and regulatory issues that are to be resolved during site characterization. Section 8.3 is the Plans section of the SCP and is structured on the basis of Issues and Information Needs, using the NNWSI Project Issues Hierarchy. Section 8.4 describes the plans for site preparation for the surface and subsurface excavations at the exploratory shaft location and a description of the exploratory shaft and underground test facilities. Section 8.5 reviews the milestones and decision points in the site characterization program up to submittal of the license application. Section 8.6 provides a description of the Quality Assurance Program for the Project, and Section 8.7 describes the plans for decontamination and decommissioning of the candidate site if the site is not selected for development as a repository. Enclosure 1 provides a working copy of the structure of Chapter 8.

Details of planned in situ testing in the Exploratory Shaft will be described in the SCP and in Study Plans, which will provide supporting material of the Yucca Mountain SCP.

2.2 The NNWSI Project Issues Hierarchy.

The Issues Hierarchy is the means by which the NNWSI Project has abstracted and organized the repository siting and licensing requirements into a hierarchial structure of Key Issues, Issues, and Information Needs. This hierarchial structure provides a means to distinguish broad questions of overall suitability (Key Issues) from more specific questions (Issues). Some questions in the regulations governing repositories deal with performance objectives or regulatory standards; other questions deal with favorability or standard operating practices and procedures. In addition, some questions in the regulations deal with postclosure time frames, while others only deal with the preclosure period. Key Issues are related to broad technical or institutional requirements pertaining to the performance of the site with respect to compliance with applicable regulations. Issues are subordinate to Key Issues. Collectively, the group

of Issues under a Key Issue indicates what questions must be resolved to satisfy the Key Issue. The Issues are also generally readily identifiable as elements of the regulations. Information Needs are subordinate to Issues and identify the specific information, data, and analyses needed to resolve the Issues.

Issues within each Key Issue in the NNWSI Project Issues Hierarchy are grouped into Characterization, Design, and Performance Issues. The separation of topics according to preclosure and postclosure time frames is automatic, because the Key Issues explicitly make the time frame distinction. Characterization Issues encompass the site characteristics, processes, and events that may affect repository design and performance. They include detailed information on the geologic, hydrologic, and other site characteristics. Design Issues address needs for information about the design of the geologic repository operations area and its associated surface facilities and underground facility. Performance Issues address the analyses necessary to assess the suitability of the Yucca Mountain site and its proposed repository facilities as a licensable repository system. Performance Issues encompass the requirements placed on the behavior of the repository system. Key Issue 3 is not included because it represents the environmental regulatory requirements and Information Needs, and covers monitoring and mitigation efforts. Key Issue 3 will be fully developed after the Environmental Impact Statement (EIS) scoping meetings and hearings are completed.

Information Needs were used as the basis for defining the field and laboratory investigations to be conducted during site characterization. Each Information Need described in Section 8.3 of the SCP will be presented according to a standard format:

1. A list of the data and parameters to be collected to satisfy the Information Need.

2. A discussion of the logic tying the data and parameters together.

3. A description of the studies and activities planned to collect the data and parameters for the Information Need.

4. A discussion of where the data and parameters will be used as input to other Information Needs.

5. A preliminary list of planned milestones and schedules for completion of the activities and studies.

2.3 Purpose

The purpose of this report is to summarize site characterization activities at the candidate site at Yucca Mountain, Nevada, for ongoing activities and the status of planned activities. This summary is provided in response to agreements between the DOE and the NRC resulting from the May 7-8, 1986 meeting. A more comprehensive discussion will follow in the SCP.

This summary concentrates on surface-based activities, which include all field activities defined by the NWPA as site characterization activities (e.g., drilling, drillhole testing and monitoring, trenching, mapping, and surveying at the Yucca Mountain site and surrounding region) that are not directly related to the ESF. Site Characterization activities related to the ES will not be initiated until after the SCP is issued. In addition, prototype testing which is not a part of site characterization, is not included in this summary. Geochemical and thermomechanical laboratory testing related to field activities are described, as well as meteorological studies. A brief technical rationale for each activity is provided, and activities are cross-referenced to the appropriate sections in the SCP.

This report is divided into two sections: ongoing site characterization activities and planned activities.

3.0 Ongoing Site Characterization Activities: Description and Rationale

Site investigation activities were initiated in 1978 when the NNWSI Project began to focus on tuff at Yucca Mountain as a potential repository host rock. The DOE identified Yucca Mountain as a potentially acceptable site in February 1983. Publication of the final EA for the Yucca Mountain site (May 1986) establishes that the site is suitable for site characterization. It is expected that some of the previously initiated activities will continue or be completed during the time between Presidential approval of the site recommendation, and issuance of the SCP. Examples of such activities include seismic monitoring, hydrologic monitoring, meteorologic monitoring, geodetic surveys, and laboratory analyses of degradable and irreplaceable samples. Office activities include modeling and data reduction and analysis of available data. Brief descriptions of each activity are given below.

3.1 Hydrologic Activities.

Various hydrologic activities have been initiated to establish the moisture conditions of the unsaturated zone, and to determine if recharge is episodic or steady-state. Saturated zone activities have been focused on determining the position of the water table, and on establishing the characteristics of fracture hydrology. The following specific activities, including the data reduction and analyses associated with field-data collection, are ongoing.

3.1.1 Seven holes have been drilled to monitor in situ moisture conditions in the unsaturated zone (Figures 1 and 2). These holes range from 400 to about 2,000 feet deep. One of these holes, USW UZ-1, has been fully instrumented and continuously monitors hydrologic properties of the unsaturated zone. Existing holes UZ-4, 5, 6, 6s, 7, and 13 will be instrumented and monitored. Gas samples are also obtained periodically from UZ-1. UZ-8, which was only partially drilled, will be re-entered, drilled to the planned total depth and instrumented. Re-entering any of these holes may be necessary to acquire additional information using geophysical logging tools and other instrumentation. This activity supports the studies identified in section 8.3.1.2.2 of the SCP.

3.1.2 Fourteen boreholes (Figures 1 and 2) were drilled into the saturated zone for the purpose of determining the elevation of the water table at various locations at the site. These boreholes range from about 1,600 to 2,000 feet deep. Water levels in the boreholes are monitored regularly to record fluctuations in water levels as a function of time. Water table levels from the fourteen water table holes were used to establish the hydraulic gradients used to estimate the saturated zone travel times presented in the EA. This activity supports the studies identified in sections 8.3.1.2.1 and 8.3.1.2.3 of the SCP.

3.1.3 Seventy-four neutron holes (depths from 50 to 200 feet) have been drilled in the vicinity of the site to monitor the infiltration of precipitation in various geologic settings. Because of the importance of flux estimates in the unsaturated zone, monitoring data on shallow infiltration is used to determine the upper bounds on flux through the repository horizon. The holes are logged periodically with thermal and epithermal neutron tools, and gamma-gamma tools. The locations of the neutron holes are shown in figures 1 and 2. This activity supports studies identified in section 8.3.1.2.3 of the SCP.

3.1.4 Nine streamflow gages have been installed in dry washes at and near Yucca Mountain to monitor the surface-water runoff that occurs during and after storms. Streamflow gages provide data to be used in predicting the frequency and magnitude of runoff resulting from heavy precipitation events, which are typical in desert environments. This activity supports studies in sections 8.3.1.5.1, 8.3.1.6.1, and 8.3.1.16.1 of the SCP.

3.1.5 Observations of debris-flow movements are being made at the time of occurrence in order to understand the mechanisms of flow and the climatic and other factors that cause them. This effort contributes to the understanding of the conditions under which paleoflood deposits occurred. This activity supports studies identified in sections 8.3.1.5.1 and 8.3.1.6.1 of the SCP.

3.1.6 Channel scour chains have been installed at three locations in the Yucca Mountain area to measure the amount of erosion, or scour, that occurs in washes during times of heavy runoff. Heavy runoff events expose successively deeper parts of the chain, thus giving a measure of the amount of sediment movement in the wash. This activity supports studies identified in sections 8.3.1.5.1 and 8.3.1.6.1 of the SCP.

3.1.7 Water-level and pressure measurements are being recorded continuously in the three UE-25c boreholes (Figure 2), located in Drill Hole Wash, using a continuously recording data logger to evaluate barometric, tidal, and other time-related effects on water levels. This information is used to provide better understanding of fracture porosity and other aquifer properties. Long-term, continuous recording is required in order to obtain an accurate correlation of the atmospheric pressure versus water-level data. This activity supports studies identified in section 8.3.1.2.3 of the SCP.

3.1.8 A mining company is drilling boreholes in the Amargosa Desert as part of its exploration programs. This commercial company have agreed to allow installation of tubing or piezometers in their holes for NNWSI Project data collection purposes. Some tubing and piezometers have been installed to measure water levels in areas adjacent to the Yucca Mountain site in order to provide data for regional hydrologic studies. Additional instruments will be installed if additional holes are made available to the Project. This activity supports studies identified in section 8.3.1.2.1 of the SCP.

3.1.9 Measurements of temperature, precipitation, and infiltration are being made at two recharge sites at Pahute Mesa and near Tonopah that are thought to be analogous to the Yucca Mountain site under pluvial climatic conditions. Temperature of the air and soil are continuously recorded on a data logger. Precipitation samples are collected from samplers and sent to the laboratory for stable isotope analysis. The measurements will aid the estimation of ground water recharge rates at the site under future pluvial conditions. This activity supports studies identified in section 8.3.1.5.1 and 8.3.1.5.2 of the SCP.

3.1.10 Laboratory testing of crushed tuff for hydrologic and other properties is being conducted for evaluation of sealing materials. Although this effort is necessary for work on sealing concepts, it has only an indirect tie to site characterization.

3.1.11 Laboratory measurements of hydrologic properties of existing core and cuttings and water and gas samples are being made to define in situ conditions. Relationships among various hydrologic properties in the unsaturated zone are being identified. This activity supports studies identified in section 8.3.1.2.2 of the SCP.

3.2. Geologic Activities.

The tectonic setting of the Yucca Mountain site is important to its overall suitability as a candidate site. Seismic data and geodetic measurements are both valuable in assessing tectonic setting of the site. The following geologic activities, including the data reduction and analyses associated with field-data collection, are currently ongoing.

3.2.1 Fifty-three seismometers (Figure 3) have been installed in the region around Yucca Mountain as part of a regional seismic network, extending in lines trending east-west from the west side of Death Valley to Caliente, and generally north-south from Tonopah to Lake Mead. The two lines intersect near Yucca Mountain. The seismometers are in continuous operation and data are recorded automatically. Data from the seismic network have been used to establish the earthquake catalog for the region (Rogers et al., 1976, 1983), which is essential for predicting the size and frequency of earthquakes that are possible during the pre-

and postclosure time periods. The ability to accurately locate earthquakes is also very important for establishing the activity of faults near the site. This activity supports studies identified in sections 8.3.1.8.2 and 8.3.1.17.3.

3.2.2 Ground motions are being measured to define aspects of the design basis for the proposed site for surface facilities near Yucca Mountain. Data from surface and downhole measurements will be used to revise approaches to predicting vibratory ground motion for surface and underground facilities. Motions from underground nuclear explosions (UNEs) are analyzed to develop the relationship between earthquakes and UNEs and for prediction of potential ground motion during repository operation. This activity supports studies identified in sections 8.3.1.8.2 and 8.3.1.17.2 of the SCP.

3.2.3 Without accurate benchmarks that are routinely surveyed, it is impossible to establish local rates of vertical or horizontal tectonic movement. Therefore, geodetic survey benchmarks have been permanently installed in and around the Yucca Mountain site in order to monitor present-day tectonic adjustments in the Yucca Mountain area. A 43-mile level line extends from Crater Flat on the west to Rock Valley on the east. A quadrilateral network has been installed across several faults in the immediate vicinity of Yucca Mountain. Biannual resurveys are conducted. These activities support studies identified in sections 8.3.1.8.2 and 8.3.1.17.2 of the SCP.

3.2.4 Determination of soil characteristics for purposes of soil modeling are made on a seasonal basis. These include dust-trap sampling, determining field capacity of soils, and periodic measurements of carbon dioxide and soil gases. The soil modeling is part of the overall climate modeling effort that addresses the effects changing climate may have on the hydrologic characteristics of the site. This activity supports studies identified in section 8.3.1.5.1 of the SCP.

3.2.5 Several trenches (Figure 4) have been excavated as part of the geologic, tectonic, and paleoclimatic studies. These trenches are sampled and mapped on an ongoing basis. Occasionally, it may be necessary to deepen or lengthen existing trenches to collect additional data and to prevent degradation of the trenches. These activities support studies described in sections 8.3.1.5.1, 8.3.1.8.2, and 8.3.1.17.2 of the SCP.

3.2.6 Geologic mapping is continuing in the vicinity of Yucca Mountain as part of the geologic, tectonic and igneous activity studies. This activity includes the collection of samples to provide dates which help to define rates of tectonic and igneous processes. This activity supports studies identified in sections 8.3.1.8.1, 8.3.1.8.2, 8.3.1.17.1 and 8.3.1.17.2 of the SCP.

3.3 Meteorological Activities.

A meteorological monitoring network has been established at the Yucca Mountain site and has been collecting data since December 1985 (Figure 5). Meteorological data is collected at five towers: four are 10 meters high,

and one is 60 meters high. The four 10-meter towers continuously measure and record wind speed, wind direction, sigma theta (standard deviation of wind direction for determining atmospheric stability), relative humidity, and temperature. The fifth tower is instrumented at both the 10-meter and 60-meter levels. The data collected at this tower include the data stated above, plus sigma phi (standard deviation of vertical wind speed), net solar and terrestrial radiation, and precipitation.

These meteorological monitoring activities have begun to provide site-specific data for use in repository design studies, and eventually in the radiological safety assessments required by the NRC (10 CFR Part 60). These activities support studies identified in sections 8.3.1.2, 8.3.1.5.1 and 8.3.1.12 of the SCP.

3.4 Geomechanical Activities.

Laboratory testing, data reduction, and data analysis is ongoing for both thermal and mechanical properties. The next phase of planned testing for thermal properties is the determination of heat capacity of samples of the Topopah Spring Member of the Paintbrush Formation. These measurements are required for predicting the behavior of the host rock under the heat load generated by the waste emplaced in the repository. The next phase of planned mechanical measurements includes low-strain-rate testing, which will help determine the proper constitutive relationships for long-term conditions of the repository, and tensile strength testing, which is relevant to certain repository design analyses.

The NNWSI Project is conducting experiments in the G-Tunnel Underground Facility on Rainier Mesa. Although these experiments are not a part of site characterization, they are ongoing field activities that will guide the planning of the ESF and experiments. Therefore, a short description is provided. A principal ongoing effort in G-Tunnel is a mining evaluation experiment. Instrumented boreholes were used to determine mining-induced rock responses, and to develop improved techniques for controlled blasting in welded tuff. In situ stress and the modulus of deformation for welded tuff are also being determined at the G-Tunnel Facility. A thin slot is cut in the tuff and a flatjack is used to pressurize the side walls, moving them back to their original unrelaxed positions. Measurements obtained through these experiments provide useful experience in preparation for similar activities in the welded tuffs at Yucca Mountain.

These activities support thermomechanical studies and testing to establish repository design constraints and considerations described in section 8.3.1.15 of the SCP. These studies are important for establishing the stability of emplacement holes and drifts, particularly with regard to the requirements for retrievability.

Activities related to measurements of rock properties to be used in predictions of long-term behavior of the potential host rock under the heat load generated by the repository support studies described in section 8.3.1.14 of the SCP. These measurements are important for predicting long term rock mass response and fluid migration due to temperature effects and for establishing whether emplacement holes are likely to remain stable during the retrieval period.

3.5 Geochemical Activities.

Geochemistry of the rocks and water in contact with emplaced waste must be established in order to predict possible interactions for use in determining the lifetime of waste containers, and for predicting radionuclide transport if releases occur. The following activities, and the data reduction and analysis associated with them, are ongoing.

3.5.1 Near-Field Activities.

Two types of laboratory activities are being conducted to characterize the expected time- and temperature- dependent conditions in the hydrologic environment immediately adjacent to the waste packages. These investigations are short-term hydrothermal rock-water interaction experiments between samples from the Topopah Spring Member and water from Well J-13, and experiments to determine the rates and mechanisms of dehydration and rehydration of repository near-field rock in response to the expected thermal field generated by the emplaced waste. In addition, experiments are being conducted to measure the rate at which radionuclides released during waste-form tests are picked up by rock wafers and transported through the wafers. These activities support geochemistry studies for characterizing the very near-field waste package emplacement environment identified in section 8.3.4.2 of the SCP. These studies are important for predicting the performance of the metal container, and for establishing expected release rates.

3.5.2 Far-Field Activities.

There are seven laboratory studies being conducted to better characterize geochemical conditions in the far-field. These include dynamic transport, mineralogy/petrology, sorption, natural isotope, ground-water chemistry, solubility, and hydrothermal studies. The first five studies listed involve experimental work using natural samples previously collected from the Yucca Mountain site. The following sections provide a discussion of each of these five studies.

3.5.2.1 Dynamic Transport Experiments.

The objective of the dynamic transport experiments is to determine the rate of movement of radionuclides along potential flow paths from the repository to the accessible environment. Factors under study which may potentially affect rates of movement include diffusion, dispersion, anion exclusion, sorption kinetics, and colloid movement in the flow geometries and hydrologic conditions that are expected to exist at Yucca Mountain. Ongoing transport studies include column experiments using crushed Yucca Mountain tuff, unsaturated solid tuff core, and fractured core. These column studies will provide experimentally determined hydrologic, physical, and chemical parameters needed to determine the rates of movement of various chemical species and aid in the prediction of radionuclide transport. In addition, diffusion experiments are being conducted using tuff wafers and rock beakers made from Yucca Mountain tuff. These experiments support studies described in section 8.3.1.3 of the SCP.

3.5.2.2 Mineralogy-Petrology Activities.

The objectives of the mineralogy-petrology activities are to describe the host rock mineralogy and petrology by establishing the mineralogic and petrographic stratigraphy including the mineralogic variability, and to provide descriptions of rock and fracture-fill petrology and mineralogy along potential transport pathways to the accessible environment. Ongoing activities include (1) studies of the potential for mineral alteration; (2) characterization of the fracture mineralogy using electron microscopy, x-ray diffraction, and radiometric dating on rock samples from cores, outcrops, and trenches; (3) mineral stability studies on clay, zeolites, and glasses that are important to the natural retardation system; and (4) studies of host-rock mineralogy-petrography using samples from drill cores and outcrops. These activities support studies described in section 8.3.1.3.2 of the SCP.

3.5.2.3 Sorption Activities.

The objective of the sorption activities is to provide data as input to the prediction of radionuclide movement from the repository to the accessible environment. Ongoing experiments include batch, crushed tuff column, and circulating column sorption experiments using tuff samples representative of the various mineralogic and stratigraphic characteristics of Yucca Mountain. Sorption coefficients of actinides and other important waste elements will be determined and used to estimate radionuclide retardation. Another sorption task involves studying the effects of microbes on sorption. This task involves determining the growth properties of microbes taken from soil samples collected from drilling locations at Yucca Mountain. Drilling fluids are used as the energy source for microorganism growth. Sorption coefficients of radionuclides on tuff in the presence of microbes will be determined. These activities support studies described in section 8.3.1.3.4 of the SCP.

3.5.2.4 Natural Isotope Chemistry Activities.

The objective of the activities related to natural isotope chemistry is to provide data on infiltration rates at Yucca Mountain. Chlorine-36 to total chlorine ratios are measured in Yucca Mountain soil samples, and changes in the ratio with depth are used to estimate infiltration rates. These activities support studies described in sections 8.3.1.3.1 and 8.3.1.2.2 of the SCP.

3.5.2.5 Ground Water Chemistry Activities.

The objectives of ground-water chemistry studies are to analyze the composition and the geochemical controls of the composition of pore waters in the unsaturated zone and in the saturated zone in and near Yucca Mountain. The saturated zone water chemistry has been well characterized and samples from Well J-13 are being used in the sorption and dynamic transport geochemistry tasks. Characterization

of pore waters from unsaturated zone samples is just beginning. These fluids will be extracted by applying pressure to the core sample, by centrifugation of the crushed core sample, or by vacuum distillation. These activities support studies described in section 8.3.1.3.1 of the SCP.

4.0 Planned Site Characterization Activities

The current schedule for the NNWSI Project assumes that the SCP will be completed in April 1987. At this time, the NNWSI Project does not expect to begin any new site characterization activities prior to issuance of the SCP.

Before any new site characterization activities can be started, the DOE must have appropriate agreements with the Bureau of Land Management for continued land access. DOE must also obtain the necessary environmental permits to comply with all Federal, State, and local environmental requirements during site characterization. In addition, the DOE must prepare study plans in consultation with the State and the NRC.

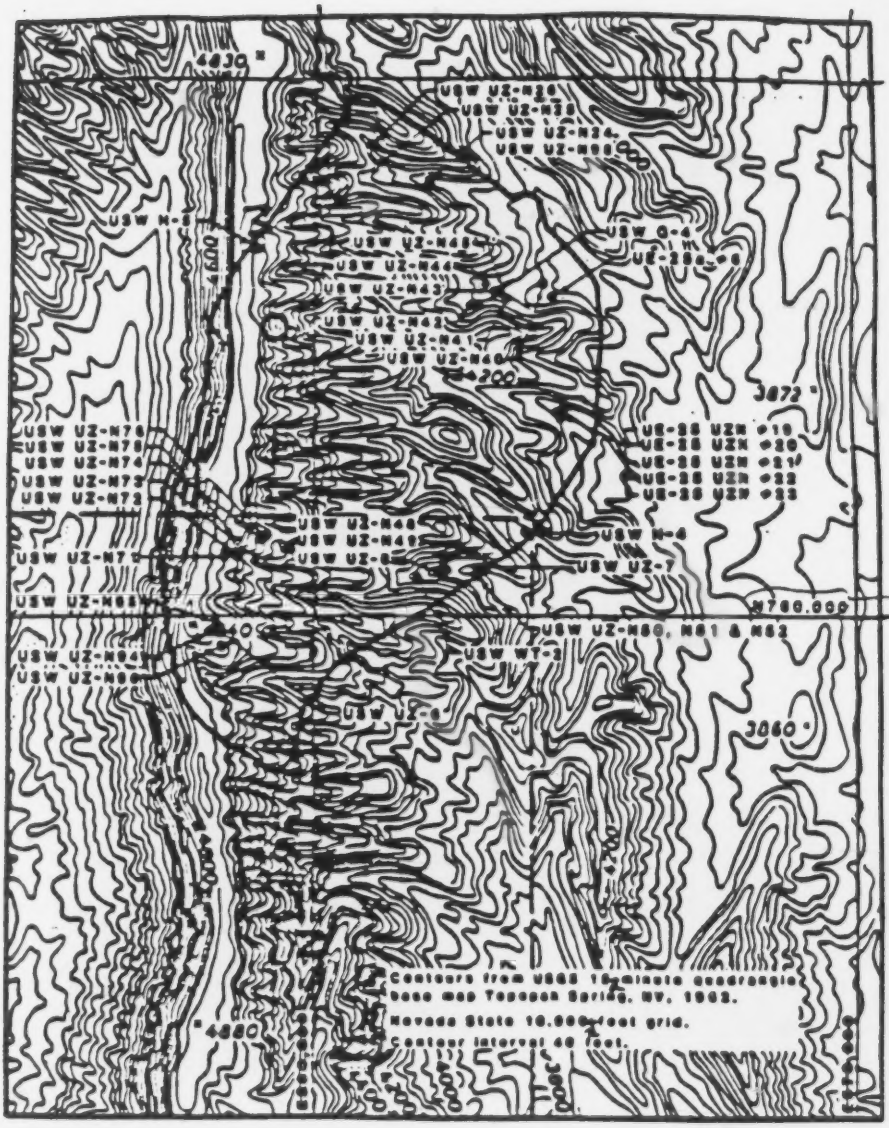


Figure 1. Drillholes located within the outline of the perimeter drift.

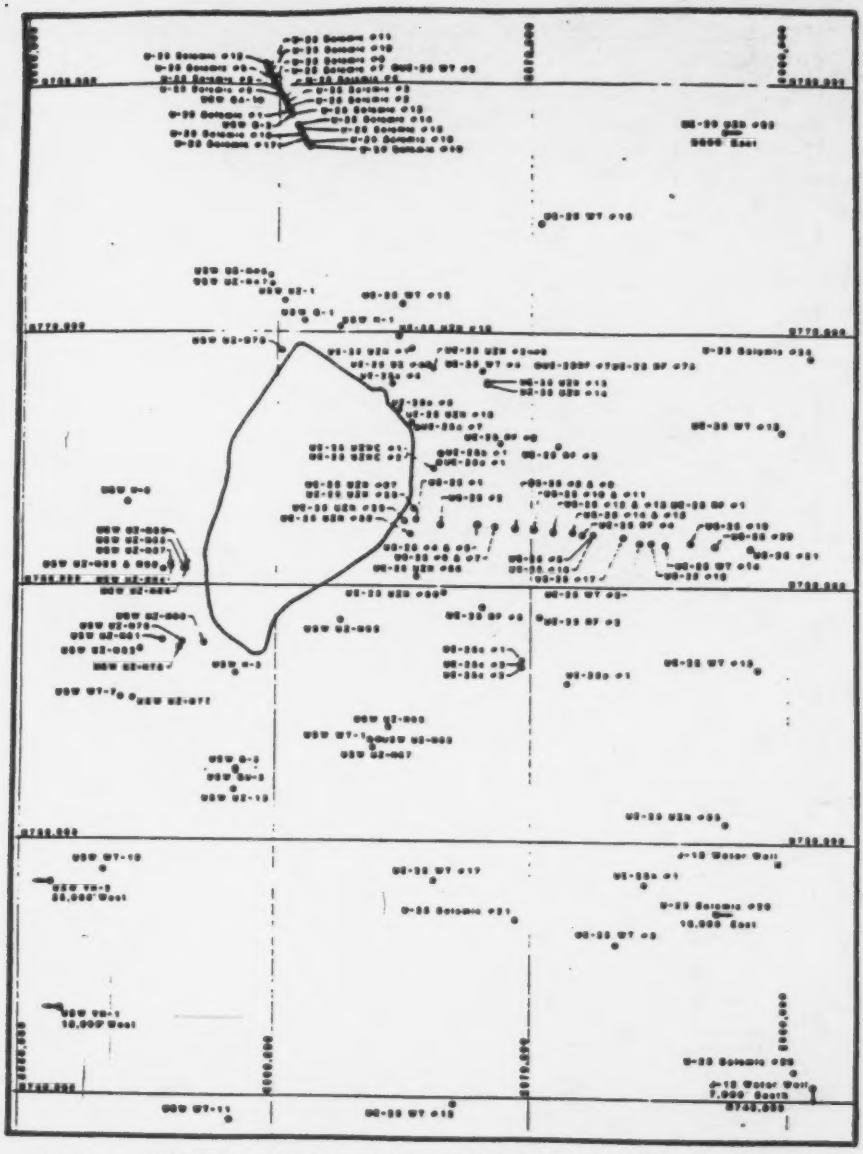
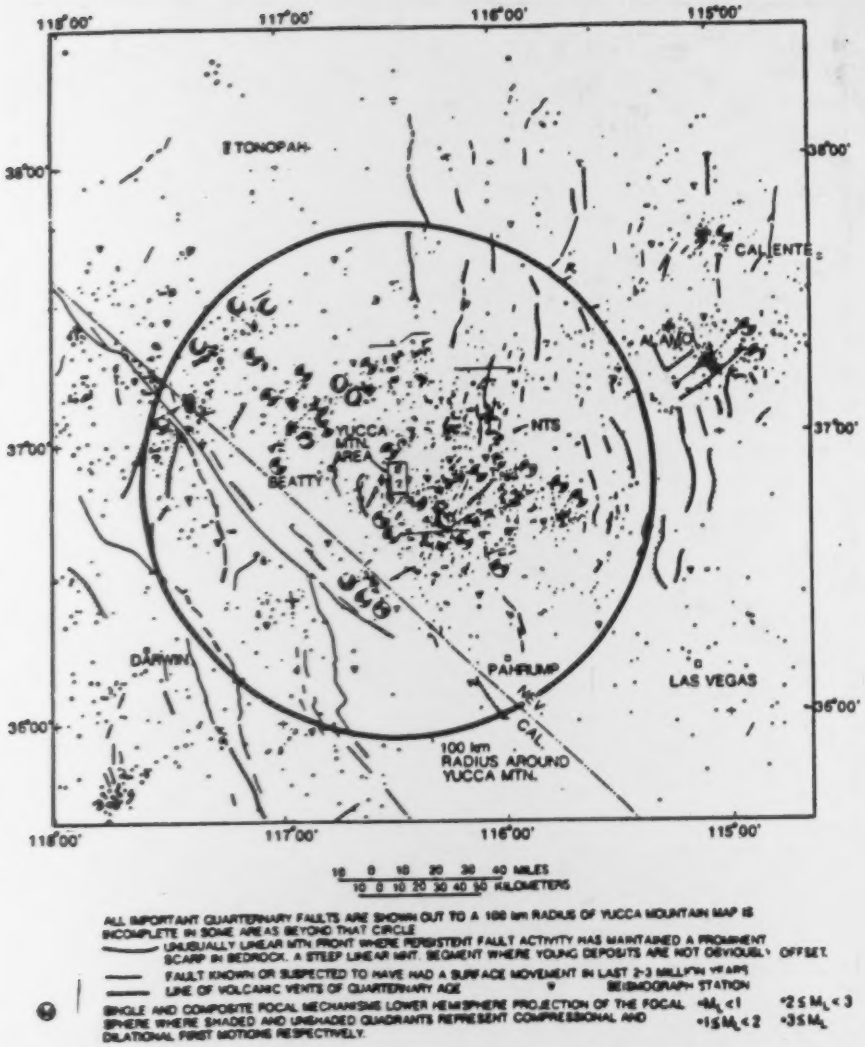


Figure 2. Drillholes located outside of the perimeter drift but within 10km of the perimeter drift.


118°00'
117°00'
116°00'
115°00'
38°00'
37°00'
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TONOPAH
CALIENTE
ANC
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NTS
BEATTY
DARWIN
PAHRUMP
LAS VEGAS
CAL
100 km RADIUS AROUND YUCCA MTN.
10 0 10 20 30 40 MILES
10 0 10 20 30 40 50 KILOMETERS
ALL IMPORTANT QUARTERNARY FAULTS ARE SHOWN OUT TO A 100 km RADIUS OF YUCCA MOUNTAIN MAP IS INCOMPLETE IN SOME AREAS BEYOND THAT CIRCLE
UNUSUALLY LINEAR MTN FRONT WHERE PERSISTENT FAULT ACTIVITY HAS MAINTAINED A PROMINENT SCARP IN BEDROCK. A STEEP LINEAR MNT. SEGMENT WHERE YOUNG DEPOSITS ARE NOT OBVIOUSLY OFFSET.
FAULT KNOWN OR SUSPECTED TO HAVE HAD A SURFACE MOVEMENT IN LAST 2-3 MILLION YEARS
LINE OF VOLCANIC VENTS OF QUARTERNARY AGE
SEISMOGRAPH STATION
SINGLE AND COMPOSITE FOCAL MECHANISMS LOWER HEMISPHERE PROJECTION OF THE FOCAL SPHERE WHERE SHADED AND UNSHADED QUADRANTS REPRESENT COMPRESSIONAL AND DILATIONAL FIRST MOTIONS RESPECTIVELY.
•$M_L < 1$
•$1 \leq M_L < 2$
•$2 \leq M_L < 3$
•$3 \leq M_L$

Figure 3. Regional Map showing locations of the regional seismic network.

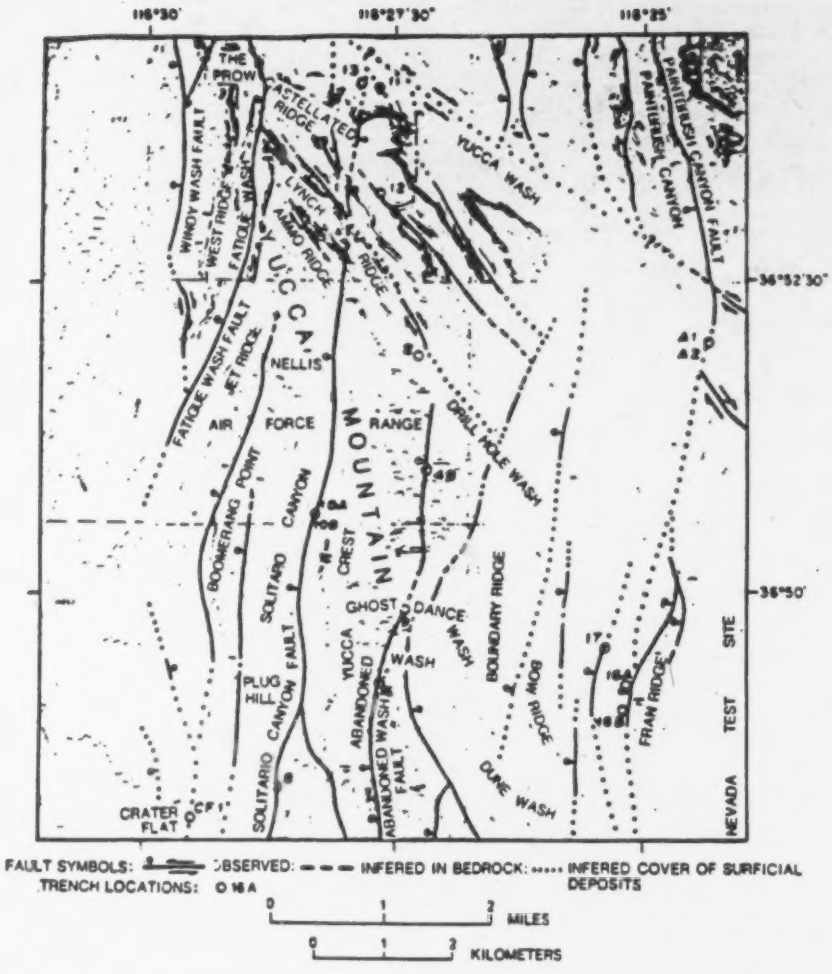

Figure 4. Trenches located along faults at Yucca Mountain interpreted from geologic mapping

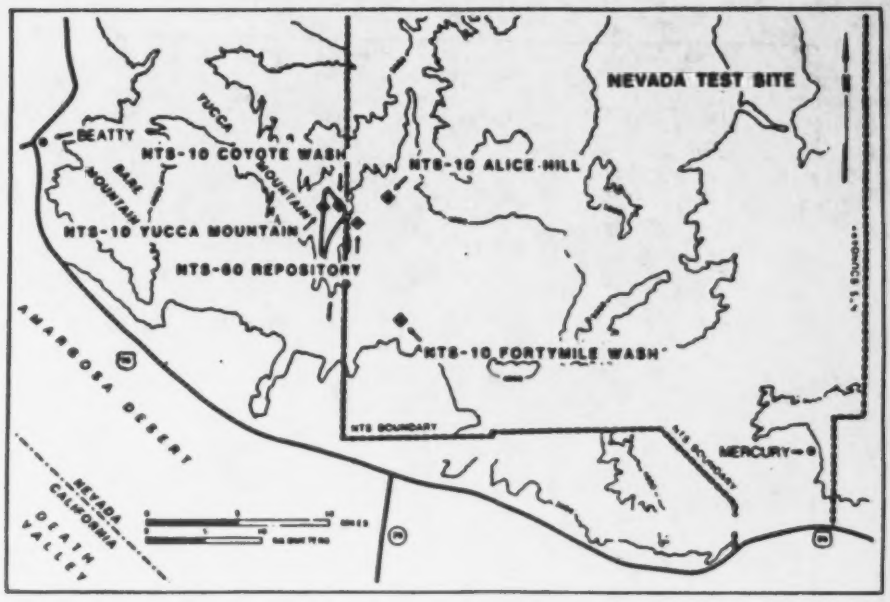

Figure 5. Meteorological monitoring sites

ENCLOSURE 1

1-16-87

REVISED SCP CHAPTER 8 STRUCTURE *

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8.7.3	Mitigation	

SCP Section #	Short Title	Issue or IN
8.3.5.20	Techniques Requiring Development	
8.3.5.20.1	Analytical Techniques	
8.3.5.20.2	Data Required	
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8.4.1	Surface Preparation	
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8.5.1	Site Characterization	
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8.6.4.3	Repository & Waste Package QA	
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8.7	DECONTAMINATION AND DECOMMISSIONING OF EXPLORATORY SHAFT FACILITIES	
8.7.1	Decontamination	
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QUESTIONS FROM CHAIRMAN JOHNSTON

Nevada Site

Question 2: Have the Department's relations with the State of Nevada improved at all since passage of the 1987 Amendments?

-- According to your statement, the State has not as yet participated in meetings with the Department concerning the Site Characterization Plan. Do you know the reason for this?

-- What are the potential ramifications of the State's refusal to participate?

Answer: Since passage of the 1987 Amendments, the Department has not experienced any significant changes in relations with the State of Nevada. However, the 1987 Amendments offer a number of opportunities for improvement, such as the potential for a benefits agreement and a written consultation and cooperation agreement, in addition to less formal avenues for cooperation. The Department continues to be committed to free and open exchange of information with the State and hopes that the State will take advantage of these opportunities to work constructively with the Department. There are a number of interactions ongoing with the State, including meetings and reviews of key documents such as draft mitigation and monitoring plans. The State has indicated that it will cooperate in the Department's preparation of the socioeconomic impact report required by section 175 of the 1987 Amendments.

Answer 2 (cont'd)

Although the State attended the general information session presented by the Department on the Consultation Draft Site Characterization Plan (SCP/CD) in Reno, Nevada, on January 28-29, 1988, it had declined to participate actively in some of the topic-specific workshops which it had requested on the SCP/CD. The State indicated that it was not able to review the plans presented in the SCP/CD without also reviewing the full suite of work plans and procedures that will be prepared to implement the SCP. However, because the SCP is the single comprehensive document that complies with the requirements of section 113 (b)(1)(A) of the Nuclear Waste Policy Act for preparation of a general plan for site characterization activities, the Department believes that the consultation draft provides a meaningful opportunity for State review and input as the SCP is being prepared for final release. Both the Nuclear Regulatory Commission (NRC) and the U.S. Geological Survey have provided extensive and useful sets of comments which the Department will consider in completing the SCP. During a meeting held on March 21-24, 1988, the State indicated

Answer 2 (cont'd)

that it intends to cooperate in upcoming SCP/CD technical meetings between the Department and the NRC. The Department believes that the participation of the State of Nevada in the Alternate Models Workshop held in Las Vegas on April 11-14, 1988, contributed to the success of that meeting with the NRC.

One of the principal reasons DOE decided to put the SCP out in consultative draft form was to allow the State and the NRC to provide early input into the SCP and to respond to their request for more than 90 days to review the SCP. By putting out the consultative draft, these organizations have more than a year to become familiar with and influence the plan.

QUESTIONS FROM CHAIRMAN JOHNSTON

Nevada Site

Question 3: In December, Jerry Szymanski, a DOE scientist, presented a report to DOE raising some concerns about the Nevada site?

-- What is the issue and what is DOE doing to address these concerns?

-- Haven't these concerns already been factored into the site characterization plans?

-- Isn't this an issue that is appropriately evaluated during site characterization?

-- Isn't it true that there will be no hard and fast answers on the technical issues until an exploratory shaft facility is constructed and testing is done at depth?

-- Should we be concerned about the Szymanski report?

Answer: A draft report titled "Conceptual Considerations of the Death Valley Groundwater System with Special Emphasis on the Adequacy of This System to Accomodate (sic) the High-Level Nuclear Waste Repository" was delivered by Mr. Szymanski to his supervisors on December 22, 1987. This draft report is currently undergoing DOE review. The issue pertains to the author's perception of the appropriate conceptual hydrologic model for the Yucca Mountain site. In summary, Mr. Szymanski believes that tectonic (primarily volcanic-thermal

Answer 3 (cont'd)

and strain-faulting) and climatic factors act in a synergistic fashion to control the hydrologic system at the site, and that the response of the hydrologic system to tectonic and climatic processes may be more severe than has been assumed for the conceptual models used to develop the Site Characterization Plan. Currently, as noted above, DOE is in the process of performing a detailed review of Mr. Szymanski's report. Additionally, a meeting with the Nuclear Regulatory Commission and the State occurred April 11-14, 1988, in Las Vegas, to discuss the general topic of which conceptual models should be considered for the Yucca Mountain site. Once the detailed review is completed, a decision will be made whether additional action is required.

DOE believes that most, if not all, of the Szymanski concerns and the suggested field work have been considered in the development of the Consultation Draft of the Site Characterization Plan. One of the products of the detailed review of the draft will be to determine if any additional

Answer 3 (cont'd)

field work is warranted to address additional concerns, such as those raised by Mr. Szymanski.

The purpose of site characterization will be to gather data and perform analyses to determine the adequacy of the site in meeting applicable requirements. In determining if the site meets regulatory requirements, it will be necessary to evaluate all credible conceptual models pertaining to the isolation characteristics of the site.

To a large extent, site suitability will be dependent on the results of exploratory shaft facility testing. This is not to say that surface investigations are secondary; the full evaluation of site suitability will be dependent on the integration of data gathered both from surface and subsurface investigations. But, it is correct that the most definitive answers to site adequacy can only be derived from both the exploratory shaft facility and surface-based testing.

DOE is concerned that all credible conceptual models pertaining to the

Answer 3 (cont'd)

ability of the Yucca Mountain site to isolate wastes, including, if appropriate, Mr. Szymanski's, are identified and evaluated. Currently, conceptual models are used to help generate testing plans for site characterization. It will be important during the course of site characterization to determine, as data is collected and analyzed, the model that best describes the site in order to appropriately judge site suitability.

QUESTIONS FROM CHAIRMAN JOHNSTON

Nevada Site

Question 4: If everything goes well, what is the most optimistic time schedule for completion of site characterization at the Nevada site?

-- When does the Department estimate that a repository would be ready to begin accepting spent fuel?

Answer: The current projected schedule envisions testing for a variety of purposes during the site characterization phase. Testing for input to the Draft Environmental Impact Statement will be completed in the second quarter of 1993. Additional testing to be done after that date will probably be confirmatory testing and evaluation as part of the performance confirmation baseline.

The current schedule described in the Mission Plan Amendment calls for the first acceptance of spent fuel in the year 2003.

QUESTIONS FROM CHAIRMAN JOHNSTON

Closeout of Washington and Texas

Question 1: According to your statement, the Department will spend $120 million to phase out the site characterization work in Washington and Texas. This is almost as much as the savings in fiscal year 1989 from not characterizing these two sites.

-- Why does the phase out cost so much? Does this cost include reclamation? Is there any way to cut down this cost?

-- Please provide for the record a report to Congress on these phaseout and reclamation activities as soon as possible.

Answer: The report on phaseout and reclamation activities was provided to Congress on April 11, 1988. The report identified our current estimate of costs to phase out project activities at both sites, terminate all contracts, and reclaim all of the salt and basalt sites. All estimated costs for the salt and basalt sites from January 1, 1988, through completion of all activities are included in the report.

The $120 million estimate was our estimate of the budget authority required to complete all activities, including reclamation activities, at the basalt and salt sites. This estimate included $80.4 million in new FY 1988 budget authority and $40 million of unobligated funds from the FY 1987

Answer 1 (cont'd)

appropriation of $499 million. Prior year funds provided the necessary budget authority to cover the expenses in the first quarter of the fiscal year and for some of the initial phaseout activities.

The phaseout, contract termination, and reclamation cost estimates are not considered to be high for the size of the projects that were ended. Over 90 percent of the more than 1,500 direct charge personnel and approximately half again as many indirect charge personnel that were working on the projects when the Nuclear Waste Policy Amendments Act of 1987 was passed will be off the payroll by the end of FY 1988.

QUESTIONS FROM CHAIRMAN JOHNSTON

Closeout of Washington and Texas

Question 2: I read from your statement that the Department will continue to pay grants to several of the States and Indian Tribes into 1988. Is it necessary to continue these grant payments so long? Do the States and Indian Tribes have unfinished work? Is there any potential benefit to the Department from this work?

Answer: The following grants closed out on March 22, 1988:

Louisiana,

Mississippi,

Utah, and

Washington Legislature

The Texas and Washington State grants are scheduled to close out on August 31, 1988.

The grants to the Nez Perce, Umatilla, and Yakima Indian Tribes are scheduled to close out on December 22, 1988.

The Amendments Act provides that the Indian Tribes may receive financial assistance for the 1-year period following enactment of the Act. The closeout period for the above-mentioned States was, and in the case of Texas and Washington is, being used for the orderly termination of activities and the archiving of data

Answer 2 (cont'd)

and other information developed under the grants. This process will enable both the States and DOE to know what information is available and to have access to it. The States are utilizing carryover funds from grants awarded prior to the Amendments Act. No additional financial assistance has been provided the States since the Amendments Act.

In addition to cataloging and archiving of material, the Indian Tribes will follow the reclamation of the Hanford site. In particular, they will follow the reclamation of Gable Mountain because of its religious significance.

QUESTIONS FROM CHAIRMAN JOHNSTON

Monitored Retrievable Storage

QUESTION 1: As you know, I am very interested in making sure that efforts to site and construct a monitored retrievable storage facility proceed in parallel with the repository program. Last week, the MRS Review Commission was appointed, and it will report to Congress in June 1989. What is the Department's current schedule for initiating MRS site survey work?

ANSWER: Section 144 of the Nuclear Waste Policy Act, as amended, states that the Secretary may conduct a survey and evaluation of potentially suitable sites for a monitored retrievable storage facility after the MRS Review Commission submits its report to Congress. The MRS Review Commission is to submit its report to the Congress on June 1, 1989. Accordingly, the Department will initiate MRS siting activities after the Commission report is transmitted to the Congress.

QUESTIONS FROM CHAIRMAN JOHNSTON

Monitored Retrievable Storage

QUESTION 2: Has the Department had any discussions with any states that might be interested in hosting an MRS facility?

-- Does the Department anticipate making use of the provision of the 1987 amendments that authorizes grants to states for feasibility studies?

ANSWER: The Department has not, to date, received any formal statements of interest from any State to host an MRS facility in its jurisdiction.

The Department anticipates that States interested in hosting an MRS facility will wish to request grants for feasibility studies provided by the Act, as amended. However, to date, the Department has not received a request for financial assistance for the purpose of assessing the feasibility of siting an MRS facility.

QUESTIONS FROM CHAIRMAN JOHNSTON

NRC Licensing

Question 1: The Senate Environment and Public Works Committee is contemplating an amendment to the NRC Reorganization bill that would set up a separate licensing board to consider any application for a construction authorization for a repository or MRS. Has the Department had an opportunity to evaluate any of the provisions of this bill that relate to the nuclear waste program?

Answer: The Department is currently evaluating the NRC Reorganization bill, but has not developed comments at this time.

QUESTIONS FROM CHAIRMAN JOHNSTON

NRC Licensing

QUESTION 2: I understand from your statement that the Department is working with NRC to develop a Memorandum of Understanding to provide a basis for the payment of licensing fees. The Department has included $15 million in its fiscal year 1989 budget request for these licensing fees. Please elaborate on this process.

ANSWER: The Office of Civilian Radioactive Waste Management (OCRWM) is negotiating with NRC on a Memorandum of Understanding (MOU) for delineating the terms for reimbursement to NRC by OCRWM during the pre-license application phase of the program. Submittal of the license application is now scheduled for 1995. The MOU will provide for reimbursement from the Nuclear Waste Fund of NRC costs incurred during OCRWM pre-license activities. NRC will provide OCRWM an estimate of costs annually for use in budget preparation. OCRWM will then clearly identify the NRC estimate in OCRWM's budget submittal for the following Fiscal Year, the year in which it is to be paid. OCRWM estimated that $15 million would be sufficient to cover NRC costs for FY 1988 and requested that amount in its FY 1989 budget.

NRC will identify and defend to the Congress the amount in their budget request, including a description of the work to be accomplished with

ANSWER 2 (CONT'D)

those funds as part of the authorization/ appropriation process for the Fiscal Year immediately preceding that in which OCRWM will provide reimbursement.

For example, based upon the estimate of costs provided to OCRWM by NRC for work to be done in FY 1989, OCRWM will include that amount in the OCRWM FY 1990 budget request. During the FY 1989 budget hearings, NRC will describe and defend the need for that amount. The amount appropriated to OCRWM in their FY 1990 budget should equal the amount appropriated to NRC in their FY 1989 budget to perform such work. OCRWM will then reimburse NRC from their FY 1990 appropriations for the actual work performed in FY 1989.

NRC and OCRWM expect to complete the MOU in the near future.

QUESTIONS FROM CHAIRMAN JOHNSTON

International Cooperation

Question 1: What changes have been made in the Department's international cooperative programs as a result of the 1987 amendments?

-- Has the mandate to terminate research on crystalline rock had the effect of terminating all international cooperative programs?

Answer: We currently have underway an examination of our international programs to determine what modifications need to be made as a result of the Amendments Act. As you are aware, the Amendments Act directs the Secretary to, not later than six months after enactment, phase out in an orderly manner funding for all research programs designed to evaluate the suitability of crystalline rock as a potential repository host medium. We have cooperative agreements with a number of countries that are investigating a variety of potential geologic media, including crystalline rock. We are evaluating these activities in detail.

At this stage in the Department's review, we believe that the continued participation by the United States in cooperative international activities is appropriate, and can be accomplished consistent with the requirements of the Amendments Act. When the review is completed, we will undertake negotiations to recast the international agreements to ensure that our participation does

Answer 1 (cont'd)

not involve research designed to evaluate the suitability of crystalline rock as a potential host medium. The overriding basis for the United States' participation in research under the agreements will be its relevance to the Yucca Mountain site and the nuclear waste management program as modified by the Amendments Act. If we are unable to renegotiate those agreements to bring our participation into conformance with the Nuclear Waste Policy Act, as amended, then we will exercise our termination rights under those agreements.

QUESTIONS FROM CHAIRMAN JOHNSTON

Grant Funding for Nevada

Question 1: Grant funding given to state and local governments has been a continual bone of contention between DOE and the states. As I understand how the process is now set up, any request for grants from state or local governments are channeled through the DOE project office.

-- Do you think it would be more appropriate for Congress itself to act on each state request, perhaps as a separate line item within the appropriations bill?

Answer: Grant applications are submitted by the States to the project office. The grant awards are made at the project office level after Headquarters' concurrence. A separate line item in the budget would not alter the Department's responsibility to administer the grants in accordance with applicable requirements, including the Nuclear Waste Policy Act of 1982.

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QUESTIONS FROM CHAIRMAN JOHNSTON

Payments to the Nuclear Waste Fund for Defense Waste

QUESTION 1: Last year, a payment mechanism was worked out to calculate the appropriate share of waste disposal costs to be paid by DOE's Office of Defense Programs. When will the Office of Defense Programs begin making payments to the nuclear waste fund?

ANSWER: The method for calculating defense and civilian shares of OCRWM costs was published in the Federal Register on August 20, 1987. As stated in the Federal Register Notice, it is the Department's intent to use this cost-sharing methodology to calculate the basis for determining a payment schedule for DOE Defense Programs (DP) fees. OCRWM has been working with DP to develop a Memorandum of Agreement that addresses a fee payment schedule to be used in developing budget requests for DP. The actual payment of any DP fees would require Congressional appropriation of funds, and the start of fee payments will be determined through the normal budgeting and appropriations process.

QUESTIONS FROM CHAIRMAN JOHNSTON

Quality Assurance

Question 1: In a March 7 letter to DOE, Robert Browning, NRC's Director of Waste Management, expresses some lingering concerns about the Department's quality assurance programs and recommends that DOE should not start any new testing programs until QA programs are in place.

-- Does DOE plan to abide by this recommendation?

-- When does the Department anticipate that these programs will be in place?

Answer: The Department of Energy (DOE) plans to meet the intent of the Nuclear Regulatory Commission (NRC) recommendation.

DOE will have the necessary quality assurance (QA) programs in place required to support the site characterization activities. These QA programs are in the process of being submitted to the NRC for review, or are being revised to address outstanding NRC comments, and will be resubmitted to the NRC after internal DOE approval.
DOE has had several meetings, to date, with the NRC to assure understanding of NRC's comments and will continue to meet with NRC, as necessary, to resolve their comments. As site characterization proceeds, DOE will continue to obtain NRC review and agreement of the QA programs required to support subsequent site characterization activities.

Answer 1 (cont'd)

DOE's goal is to have a qualified QA program in place that meets the requirements of 10 CFR 60 early next year.

QUESTIONS FROM SENATOR HECHT

Question 1: When will the administration appoint a Nuclear Waste Negotiator as described in the nuclear waste amendments enacted last December?

Answer: Section 402 of the Nuclear Waste Policy Amendments Act of 1987 provides for an Office of the Nuclear Waste Negotiator to be established within the Executive Office of the President. The Nuclear Waste Negotiator is to be appointed by the President and confirmed by the Senate with a term of office that expires in January 1993. The Amendments Act assigns no role or responsibility to DOE in the selection, nomination, and confirmation process.

QUESTIONS FROM SENATOR HECHT

Question 2: What is the Department doing to implement the Hecht amendment requiring a report on impact assistance for Nevada in connection with a repository?

Answer: Major milestones for the report have been established, and a schedule has been prepared to assure completion and transmittal of the report to the Congress by December 22, 1988. A meeting with Nevada State and local government officials was held February 17, 1988, to brief them on the Department's plans for the Section 175 report and to request their cooperation in sharing the socioeconomic information available at local, county, and State offices and being generated under the State of Nevada's socioeconomic study program. The State of Nevada has begun forwarding the data to DOE needed for the preparation of the report. A followup meeting was held on April 11, 1988, with State officials to brief them on the proposed annotated table of contents and progress for the preparation of the report.

QUESTIONS FROM SENATOR HECHT

Question 3: More than two months ago you received a letter from me, signed by ten other Senators, including three other members of this Committee, and four members of the Appropriations Committee. You received a similar letter signed by thirteen Congressmen. Both these letters urged the Department to implement the new provisions in the nuclear waste law that require research on subseabed disposal of nuclear waste. Specifically, the letters asked the Department to make $5 million available out of the Nuclear Waste Fund to get things started. The letter also indicated that we want the Woods Hole Oceanographic Institution in Massachusetts to have the lead for the Subseabed Consortium.

When will the Department respond to our letter?

Answer: A response to your letter is in progress. We anticipate it will be completed shortly.

QUESTIONS FROM SENATOR HECHT

Question 3 (continued): When will the Department contact Woods Hole about formally establishing the Consortium?

Answer: The Department is drafting a letter to the appropriate Congressional leaders proposing to reprogram funds to carry out the tasks specified in the new provisions of the nuclear waste law. Upon the availability of reprogrammed funds, the Department will act expeditiously to contact Woods Hole and designate the Seabed Consortium.

Discussions within the Department are addressing the appropriate ways that the Subseabed Consortium may be designated in keeping with the Nuclear Waste Policy Amendments Act of 1987 and other relevant legislation pertaining to the creation of such groups. Avenues of communication will be used to notify a broad spectrum of potentially interested universities and other organizations.

QUESTIONS FROM SENATOR HECHT

Question 3 (continued): Will the Department comply with our request and fund the program out of the Nuclear Waste Fund?

Answer: It is the Department's view that it is inappropriate to use the Nuclear Waste Fund for the subseabed disposal research program in FY 1988.

QUESTIONS FROM SENATOR HECHT

Question 3 (continued): How will the Department make sure that all the limited funds available are in fact put to good use by the scientists, instead of absorbed by the Department's bureaucracy here in Washington, D.C.?

Answer: Any funds reprogrammed in FY 1988 will be used to carry out the tasks specified in the new provisions of the nuclear waste law.

QUESTIONS FROM SENATOR HECHT

Question 3 (continued): I assume that the Department will meet or beat its mid-September deadline for the report on subseabed research. Is that correct?

Answer: The schedule for producing the report may be delayed due to the lack of appropriated funds when the legislation was enacted. The Department intends, however, that the report will be prepared expeditiously once reprogrammed funds are available.

QUESTIONS FROM SENATOR HECHT

Question 4: Has the Department given Nevada the opportunity to take advantage of the Hecht amendment to allow for on-site State oversight of all aspects of site characterization, and if so, what has been Nevada's response?

Answer: The opportunity for State oversight has been available to Nevada for the past 2 years under the provisions of their State grant. A letter was sent April 6, 1988, to Governor Bryan from Secretary Herrington specifically to offer the State the opportunity for an on-site representative, a benefits package complying with the 1987 Amendments, and a renewal of the Department's offer to enter into negotiations with Nevada for a Consultation and Cooperation Agreement.

QUESTIONS FROM SENATOR HECHT

Question 5: What discussion has the Department had with the City of Las Vegas, or Clark and Nye' Counties, with respect to a benefits agreement or impacts assistance in connection with the repository program?

Answer: Preliminary discussions have been held between the Department of Energy (DOE) and representatives of Nye and Clark Counties, including the city of North Las Vegas, with respect to new financial assistance programs under the Amendments Act. No discussions have been held with representatives of the city of Las Vegas. In addition, the Clark County Board of Commissioners, by letter dated April 11, 1988, has requested the Secretary to designate Clark County as an "affected unit of local government" under the Nuclear Waste Policy Amendments Act of 1987. By letter dated April 21, 1988, the Secretary formally designated Clark County as an affected unit of local government.

QUESTIONS FROM SENATOR HECHT

Question 6: What is the Department doing to implement my transportation amendments that are contained in the nuclear waste amendments?

Answer:

NRC Certification of Cask Designs

Consistent with the requirements of section 180(a), the DOE will use casks having NRC-certified designs for shipments of spent fuel and high-level radioactive waste conducted under subtitle A and C of the NWPA, as amended. Related technical, procedural, and schedule requirements are already being addressed with the NRC under a Memorandum of Understanding signed in 1983 (48 Fed. Reg. 51875).

Prenotification

As required by section 180(b), the DOE will comply with regulations of the NRC regarding advance notification of State and local governments before the transportation of spent fuel and high-level radioactive waste under subtitle A and subtitle C of the NWPA, as amended. Current NRC regulations and DOE procedures require that written notification be provided to States before spent fuel or high-level radioactive waste is shipped in or through a State. The DOE is also considering additional methods for meeting the

Answer 6 (cont'd)

objectives of written prenotification, with evaluations focusing on the potential use of satellite tracking to provide instant information about the location and status of shipments.

Assistance for Training

The schedule for development and operation of the overall waste management and disposal system affords the time necessary for careful evaluation of the level of DOE assistance required (under section 180(c)) to support the training of safety personnel of Indian Tribes and local governments, for inspection and enforcement activities, and for response to emergency situations involving shipments of radioactive waste. The DOE plans to implement a phased approach to address:

- The roles and responsibilities of governmental entities for shipment inspection, enforcement of transportation safety requirements, and emergency response.

- Specific training needs of, and appropriate programs for, local governments and Indian Tribes.

Answer 6 (cont'd)

- The extent to which training can be conducted through existing programs -- including those offered by DOE, FEMA, DOT, the States, and private organizations.

- Potential shipping routes to assist in determining the specific units of local government and Indian Tribes through whose jurisdictions waste will likely be transported, and which therefore will require training.

The results of such evaluations and options for providing assistance will be discussed with other Federal agencies and interested parties, and in DOE meetings or workshops. Related findings will then form the basis for the DOE's definition of specific Tribal and local training requirements and a policy for the provision of related technical and financial assistance. While the schedule for providing assistance will be determined in consultation with representatives of States, Indian Tribes, and local governments, the DOE expects that assistance should be provided three to five years before shipments begin in order to allow time for actual training.

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United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, DC 20510-6150

March 30, 1988

Mr. Charles E. Kay
Acting Director
Office of Civilian
Radioactive Waste Management
U. S. Department of Energy
Washington, D.C. 20585

Dear Mr. Kay:

I want to thank you for testifying before the Committee on March 28, 1988 on the OCRWM's FY89 budget request. As a follow-up to the hearing, I am enclosing several questions to be answered and included in the printed hearing record. I would like to receive the answers to these questions as soon as possible, but not later than April 29, 1988. In addition, several items were asked to be provided for the Record. I am also asking that they be made available as soon as possible.

In addition to sending your responses to myself and my colleagues, please provide a copy of your written responses to Mr. Al Astrin of the full committee staff in room SD-304. If you have any questions concerning this request please contact Mary Louise Wagner at 224-7569.

With kindest personal regards,

Sincerely,

J. Bennett Johnston
Chairman

Enclosure

JBJ/tc

080513

Questions for the Record

Department of Energy
March 28 Hearing

Nevada site

1. How has work progressed at the Nevada site since passage of the 1987 amendments?

-- What work is underway now and at what pace will the scope of work be expanded?

-- When do you expect to begin drilling of the exploratory shaft?

2. Have the Department's relations with the state of Nevada improved at all since passage of the 1987 amendments?

-- According to your statement, the state has not as yet participated in meetings with the Department concerning the site characterization plan. Do you know the reason for this?

-- What are the potential ramifications of the state's refusal to participate?

3. In December, Jerry Szymanski, a DOE scientist, presented a report to DOE raising some concerns about the Nevada site?

-- What is the issue and what is DOE doing to address these concerns?

-- Haven't these concerns already been factored into the site characterization plans?

-- Isn't this an issue that is appropriately evaluated during site characterization?

-- Isn't it true that there will be no hard and fast answers on the technical issues until an exploratory shaft facility is constructed and testing is done at depth?

-- Should we be concerned about the Szymanski report?

4. If everything goes well, what is the most optimistic time schedule for completion of site characterization at the Nevada site?

-- When does the Department estimate that a repository would be ready to begin accepting spent fuel?

Closeout of Washington and Texas

1. According to your statement, the Department will spend $120 million to phase out the site characterization work in Washington and Texas. This is almost as much as the savings in fiscal year 1989 from not characterizing these two sites.

Why does the phase out cost so much? Does this cost include reclamation? Is there any way to cut down this cost?

Please provide for the record a report to Congress on these phaseout and reclamation activities as soon as possible.

2. I read from your statement that the Department will continue to pay grants to several of the states and Indian tribes into 1988. Is it necessary to continue these grant payments so long? Do the states and Indian tribes have unfinished work? Is there any potential benefit to the Department from this work?

MRS

1. As you know, I am very interested in making sure that efforts to site and construct a monitored retrievable storage facility proceed in parallel with the repository program. Last week, the MRS Review Commission was appointed, and it will report to Congress in June 1989. What is the Department's current schedule for initiating MRS site survey work?

2. Has the Department had any discussions with any states that might be interested in hosting an MRS facility?

-- Does the Department anticipate making use of the provision of the 1987 amendments that authorizes grants to states for feasibility studies?

NRC Licensing

1. The Senate Environment and Public Works Committee is contemplating an amendment to its NRC Reorganization bill that would set up a separate licensing board to consider any application for a construction authorization for a repository or MRS. Has the Department had an opportunity to evaluate any of the provisions of this bill that relate to the nuclear waste program?

2. I understand from your statement that the Department is working with NRC to develop a Memorandum of Understanding to provide a basis for the payment of licensing fees. The Department has included $15 million in its fiscal year 1989 budget request for these licensing fees. Please elaborate on this process.

International Cooperation

1. What changes have been made in the Department's international cooperative programs as a result of the 1987 amendments?

-- Has the mandate to terminate research on crystalline rock had the effect of terminating all international cooperation programs?

Grant funding for Nevada

1. Grant funding given to state and local governments has been a continual bone of cotention between DOE and the states. As I understand how the process is now set up, any request for grants from state or local governments are channeled through the DOE project office.

-- Do you think it would be more appropriate for Congress itself to act on each state request, perhaps as a separate line item within the appropriations bill?

Payments to the Nuclear Waste Fund for Defense Waste

1. Last year, a payment mechanism was worked out to calculate the appropriate share of waste disposal costs to be paid by DOE's Office of Defense Programs. When will the Office of Defense Programs begin making payments to the nuclear waste fund?

Quality Assurance

1. In a March 7 letter to DOE, Robert Browning, NRC's Director of Waste Management, expresses some lingering concerns about the Department's quality assurance programs and recommends that DOE should not start any new testing programs until QA programs are in place.

-- Does DOE plan to abide by this recommendation?

-- When does the Department anticipate that these programs will be in place?

QUESTIONS OF SENATOR HECHT REGARDING THE FY 1989 BUDGET FOR THE ENERGY DEPARTMENT'S HIGH LEVEL NUCLEAR WASTE PROGRAM

1. When will the administration appoint a Nuclear Waste Negotiator as described in the nuclear waste amendments enacted last December?

2. What is the Department doing to implement the Hecht amendment requiring a report on impact assistance for Nevada in connection with a repository?

3. More than two months ago you received a letter from me, signed by ten other Senators, including three other members of this Committee, and four members of the Appropriations Committee. You received a similar letter signed by thirteen Congressmen. Both these letters urged the Department to implement the new provisions in the nuclear waste law that require research on subseabed disposal of nuclear waste. Specifically, the letters asked the Department to make $5 million available out of the Nuclear Waste Fund to get things started. The letter also indicated that we want the Woods Hole Oceanographic Institution in Massachusetts to have the lead for the Subseabed Consortium.

When will the Department respond to our letter?

When will the Department contact Woods Hole about formally establishing the Consortium?

Will the Department comply with our request and fund the program out of the Nuclear Waste Fund?

How will the Department make sure that all the limited funds available are in fact put to good use by the scientists, instead of absorbed by the Department's bureaucracy here in Washington D.C.?

I assume that the Department will meet or beat its mid-September deadline for the report on subseabed research. Is that correct?

4. Has the Department given Nevada the opportunity to take advantage of the Hecht amendment to allow for on-site State oversight of all aspects of site characterization, and if, so, what has been Nevada's response?

5. What discussion has the Department had with the City of Las Vegas, or Clark and Nye Counties, with respect to a benefits

agreement or impact assistance in connection with the repository program?

6. What is the Department doing to implement my transportation amendments that are contained in the nuclear waste amendments?

7. Last month I submitted a number of questions for the record in connection with this Committee's oversight of the Department's budget. Why haven't I received a response to my questions?

J. BENNETT JOHNSTON, LOUISIANA, CHAIRMAN
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United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, DC 20510-6150

March 30, 1988

Mr. Hugh Thompson, Jr.
Director
Office of Nuclear Materials
Safety and Safeguards
Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Thompson:

I want to thank you for testifying before the Committee on March 28, 1988 on the Department of Energy's Office of Civilian Radioactive Waste Management FY89 budget request. As a follow-up to the hearing, I am enclosing several questions to be answered and included in the printed hearing record. I would like to receive the answers to these questions as soon as possible, but not later than April 29, 1988. In addition, several items were asked to be provided for the Record. I am also asking that they be made available as soon as possible.

In addition to sending your responses to myself and my colleagues, please provide a copy of your written responses to Mr. Al Astrin of the full committee staff in room SD-304. If you have any questions concerning this request please contact Mary Louise Wagner at 224-7569.

With kindest personal regards,

Sincerely,

J. Bennett Johnston
Chairman

Enclosure

JBJ/tc

Questions for the Record

NRC Witness -- Hugh Thompson
March 28 Hearing

"1. On page 6 of your testimony, you identify three primary areas of concern in DOE's nuclear waste program. As I understand NRC's role in the nuclear waste program, these are precisely the type of concerns that NRC should be raising. Is that a correct understanding?

2. Do you feel that the Department is working to develop its testing programs to adequately address the technical issues raised thus far by NRC? If not, what could be done better?

3. Do you feel that the interaction between NRC and the Department has allowed the technical issues raisedthus far to be addressed openly and objectively? If not, how could this process be improved?

4. The Department has requested $15 million in FY-89 to pay licensing fees to NRC. How does this amount compare with the licensing fees paid by utilities for reactor licensing? "

QUESTION 1. On page 6 of your testimony, you identify three primary areas of concern in DOE's nuclear waste program. As I understand NRC's role in the nuclear waste program, these are precisely the type of concerns that NRC should be raising. Is that a correct understanding?

ANSWER.

The committee has a correct understanding of NRC's role in the nuclear waste program. During the current pre-licensing phase of NRC's High-Level Waste program, both the Nuclear Waste Policy Act and our regulation, 10 CFR 60, require NRC to raise potential licensing concerns as early as practicable in order to enable DOE to resolve them before the licensing hearings begin. This role is demonstrated by the three areas of primary concern we highlighted in our March 28, 1988 testimony before your committee (i.e., DOE's quality assurance program, the use of alternative conceptual models in the development of the site testing program, and exploratory shaft location and depth).

Johnston/NMSS
4/20/88

QUESTION 2. Do you feel that the Department is working to develop its testing programs to adequately address the technical issues raised thus far by NRC? If not, what could be done better?

ANSWER.

The Consultation Draft Site Characterization Plan (CDSCP) review has been the first formal mechanism for NRC staff to review DOE's investigation programs at the Yucca Mountain site. Among other things, the staff evaluated how the CDSCP responded to NRC comments on earlier DOE documents, such as the final Environmental Assessment on the Yucca Mountain site. The NRC staff's review has highlighted three major concerns which have been previously raised by the staff. These major concerns are related to DOE's quality assurance (QA) program, use of alternative conceptual models, and exploratory shaft location and depth. DOE and NRC staff are in the process of holding technical meetings to help ensure that DOE fully understands NRC staff concerns and considers them in the development of the statutory SCP and in the planning of new site characterization activities scheduled to start prior to the issuance of the statutory SCP. To better pursue these concerns, more effective technical interactions, such as the more recent technical meetings and QA audits, are needed. Once the NRC staff has received and reviewed the statutory SCP and its associated study plans, we will be better able to determine whether the technical interactions have been effective in resolving our concerns.

Johnston/NMSS
4/12/88

QUESTION 3. Do you feel that the interaction between NRC and the Department has allowed the technical issues raised thus far to be addressed openly and objectively? If not, how could this process be improved?

ANSWER.

In general, recent interactions between NRC and DOE on technical issues have been open and objective. They have improved since enactment of the Nuclear Waste Policy Amendments Act of 1987 which enabled NRC and DOE staff to concentrate their efforts on one candidate site, the Yucca Mountain site. They can be further improved by continuing to have frequent and direct technical exchange between the engineers and scientists who are doing the work for DOE, NRC, and the State of Nevada.

QUESTION 4. The Department has requested $15 million in FY89 to pay licensing fees to NRC. How does this amount compare with the licensing fees paid by utilities for reactor licensing?

ANSWER.

The NRC High-Level Waste program activities, for which costs are recovered from the Nuclear Waste Fund, are not comparable to the reactor licensing activities for which fees are paid by utilities. However, the proposed cost per staff-year used to calculate the cost is the same in both cases.

Fees for licensing a reactor are based on direct effort expended by NRC staff to review the specific license application and does not include NRC activities that are generic to all reactors (e.g. research, resolution of generic safety issues, development of rules and regulations, etc.) Under current rules, fees applied to an applicant for a reactor operating license cannot exceed about $3 million prior to receipt of the operating license. In contrast to the fee for licensing a reactor, the costs recovered from the Nuclear Waste Fund are for all the NRC activities associated with regulating the disposal and management of spent fuel and high-level waste to meet NRC's responsibilities under the Nuclear Waste Policy Act (NWPA) of 1982 and its 1987 amendments. This is consistent with Section 302 of the NWPA which authorizes DOE to make a variety of expenditures from the Nuclear Waste Fund for activities under Titles I and II of the Act, including reimbursement of NRC costs. The Department of Justice concluded that this legislation imposes an obligation on the NRC to recover costs associated with its licensing responsibilities under the Act.